APPLICATION

TRANSAXLE APPLICATION

Application	Transaxle Model
Cabrio (2001-02)	01M 4-Speed
Golf, GTI, Jetta & New Beetle	01M 4-Speed
Passat	01V 5-Speed

IDENTIFICATION

OIL PAN GASKET

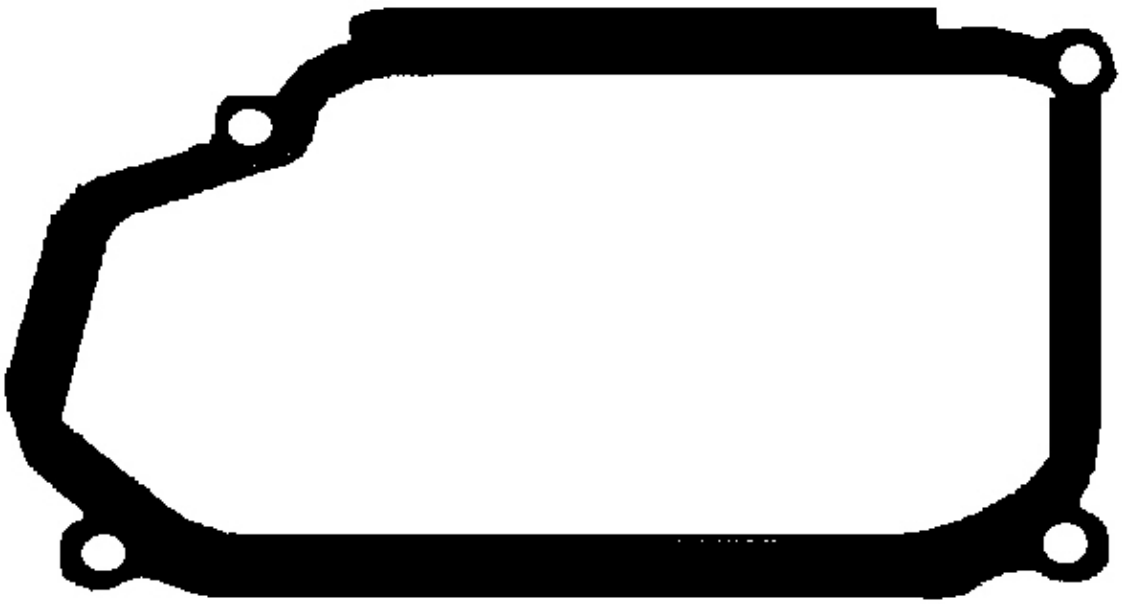

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Fig. 1: Identifying Oil Pan Gasket (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

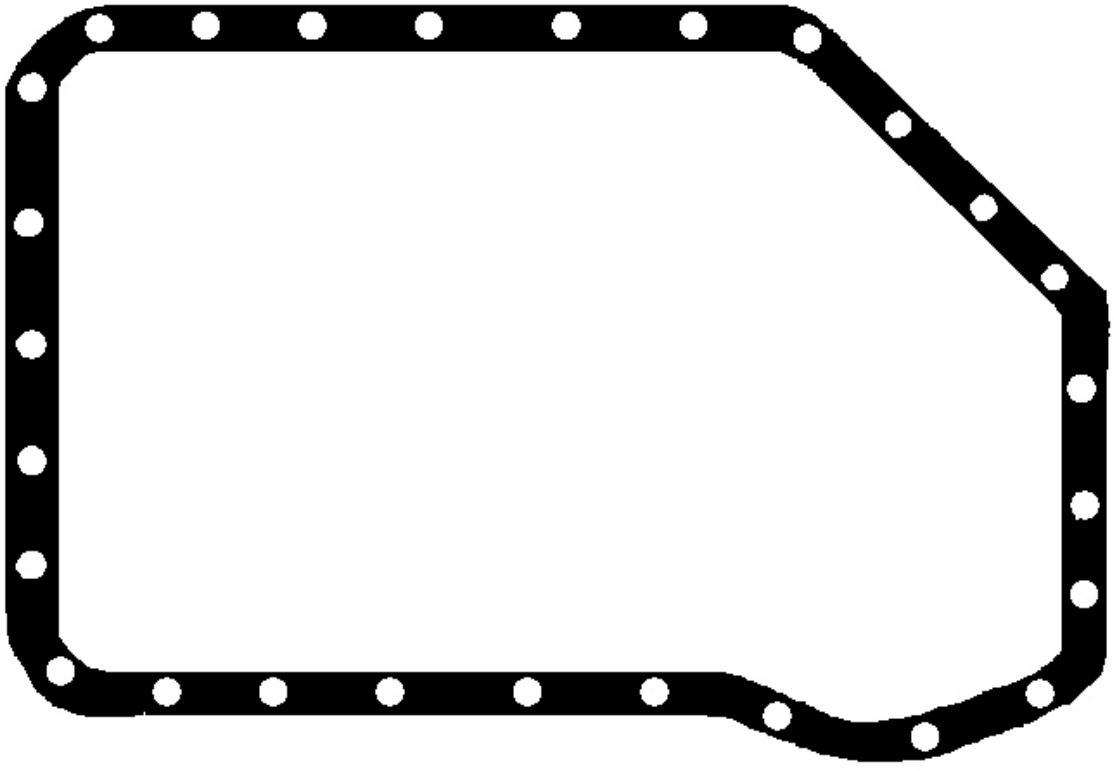

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Fig. 2: Identifying Oil Pan Gasket (01V Transaxle)
Courtesy of AUDI OF AMERICA, INC.

LUBRICATION

SERVICE INTERVALS

Transaxle

Check fluid level at 20,000 mile intervals. Fluid is filled for life. No changing is required.

Center Differential & Final Drives

Check fluid level at 20,000 mile intervals. Fluid is filled for life. No changing is required.

CHECKING FLUID LEVELS

NOTE: ATF level is affected by ATF temperature. Checking ATF level at too low a temperature leads to overfilling. Checking ATF level at too high a temperature leads to under filling. Overfilling or under filling transaxle can lead to transaxle malfunction.

NOTE: When ATF level is checked, the seal on the level plug must always be replaced.

VAG Scan Tool (1551) and Diagnosis Cable (1551/3B) are required to check ATF level. Scan tool is used to measure ATF temperature. Follow aftermarket scan tool manufacturer instructions (if applicable) to check ATF temperature.

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

01M Transaxle (Cabrio)

1. Prior to checking ATF level, ensure transaxle ATF temperature is not above about 86°F (30°C). Park vehicle on level surface. Set selector lever to Park. Apply parking brake. Connect ATF reservoir from VAG 1924 filling system to vehicle.
2. Connect Scan Tool VAG 1551. Enter "02 transmission electronics". Advance until "SELECT FUNCTION XX" is displayed. Start engine.
3. Using scan tool, press zero and 8. RAPID DATA TRANSFER, 08-READ MEASURED VALUE BLOCK should be displayed. Confirm entry with "Q" key. Enter 0 5 to select display group number. Confirm with "Q" key. First display indicates ATF temperature. Allow temperature to reach 95-113°F (35-45°C).
4. Raise and support vehicle. Place drain pan under transaxle. Remove ATF level plug (arrow) from oil pan. See **Fig. 3** . A small amount of ATF should drip from overflow line (2) with engine running. See **Fig. 4** . If ATF drips out of hole, ATF does not need to be topped off. Install NEW seal (1) on ATF level plug and tighten to 11 ft. lbs. (15 N.m). Turn engine off. ATF check is complete. Plug (3) and cap (4) remain closed. See **Fig. 4** .

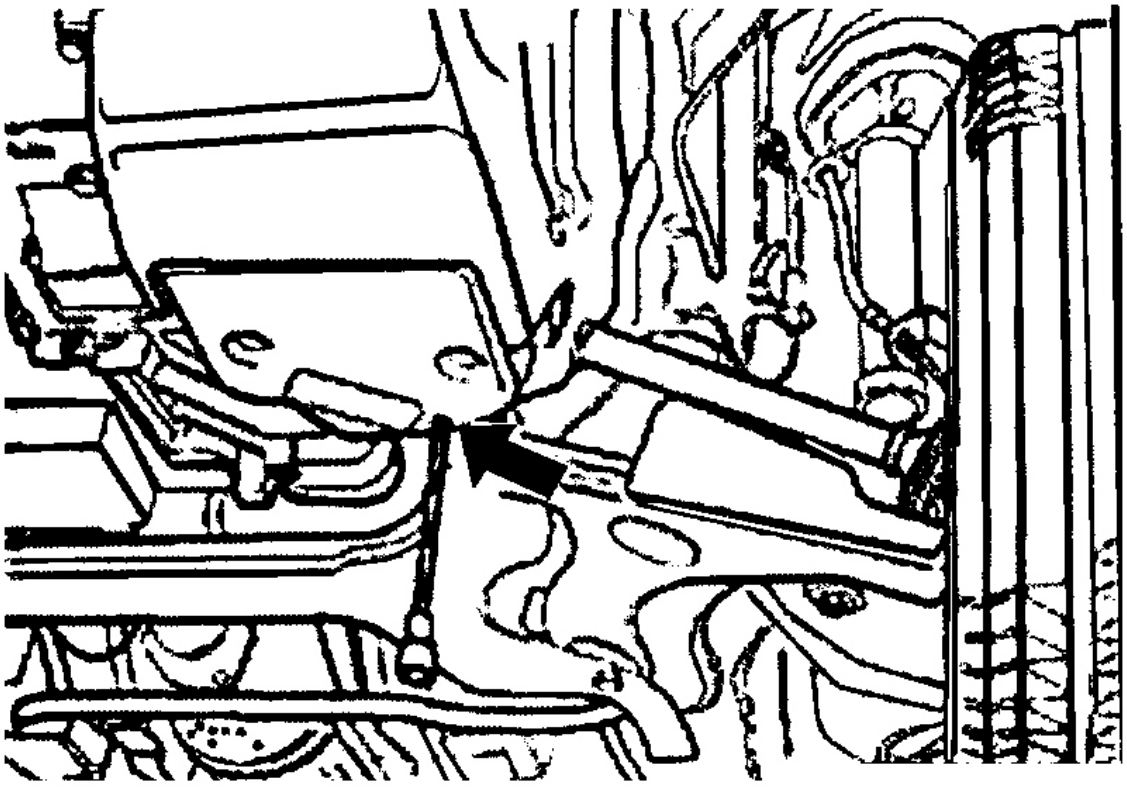

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Fig. 3: Removing ATF Level Plug From Oil Pan (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

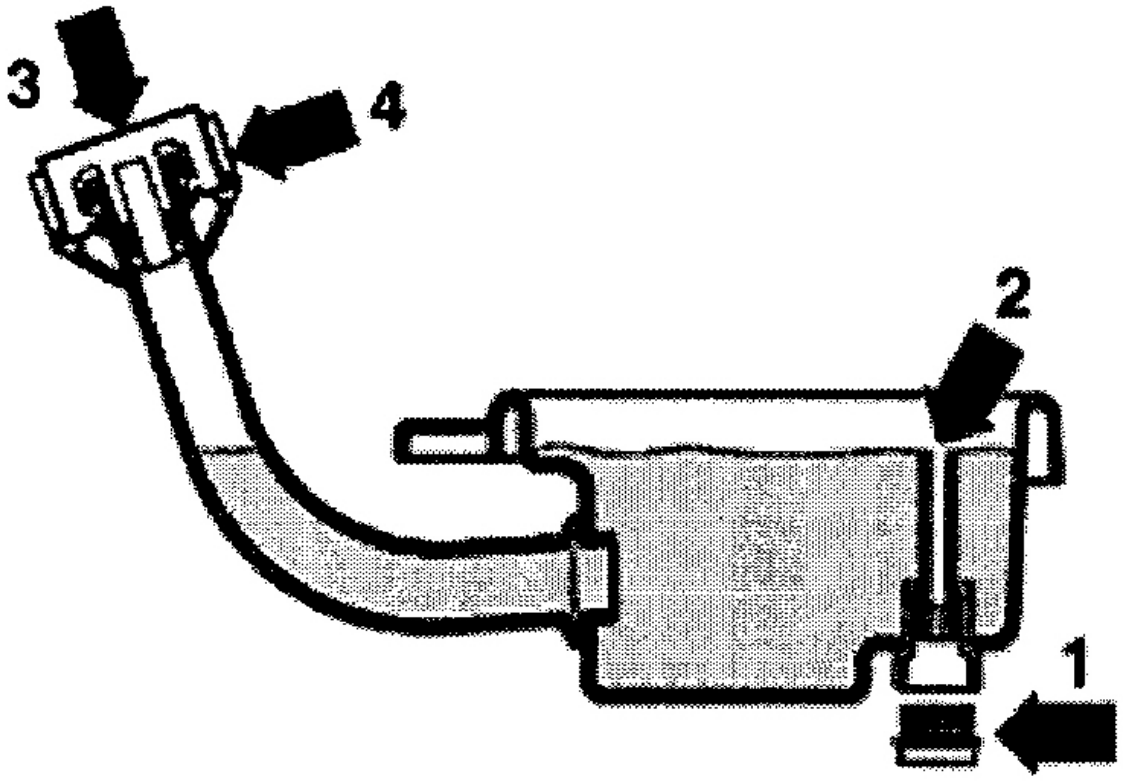

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Fig. 4: Locating Plug Seal, Overfill Pipe, Sealing Plug & Cap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5. If ATF needs to be topped off, remove plug protective cap (arrow) using a screwdriver. See **Fig. 5** . Always replace cap, as cap will be damaged during removal. Some transaxles have a cap with a spring retainer. This cap can be reused. Remove plug from filler line.
6. **NOTE: An insufficient amount of ATF, as well as filling ATF to excess, affects the function of the transaxle.**

   Using ATF Filling System (VAG 1924), add ATF until fluid runs out of level plug hole (arrow). See **Fig. 6** . Install NEW seal (1) to level plug and tighten to 11 ft. lbs. (15 N.m). See **Fig. 7** . Install sealing plug on filler pipe until the spring retainer lock locates, or install plug on filler pipe and secure with a NEW cap (2). See **Fig. 7** . Lock cap in place. The cap secures the sealing plug.

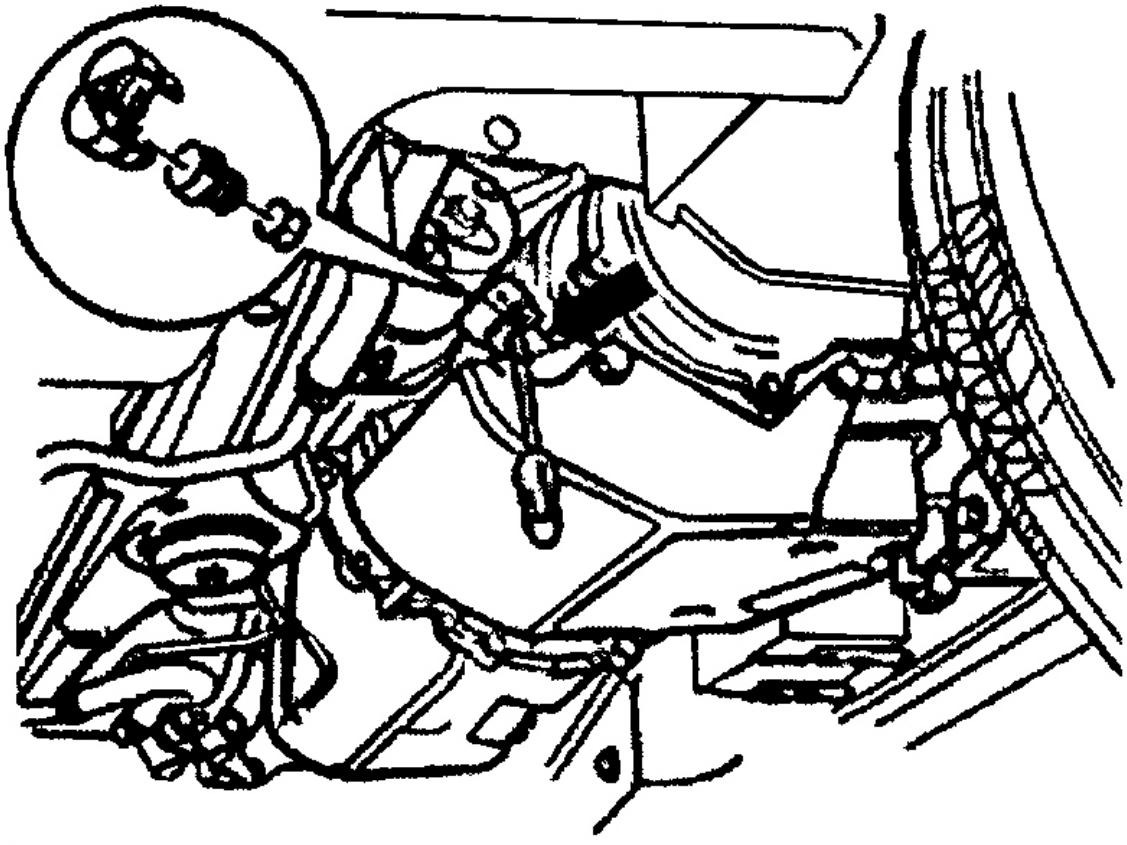

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Fig. 5: Removing Plug Protective Cap From Filler Line (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

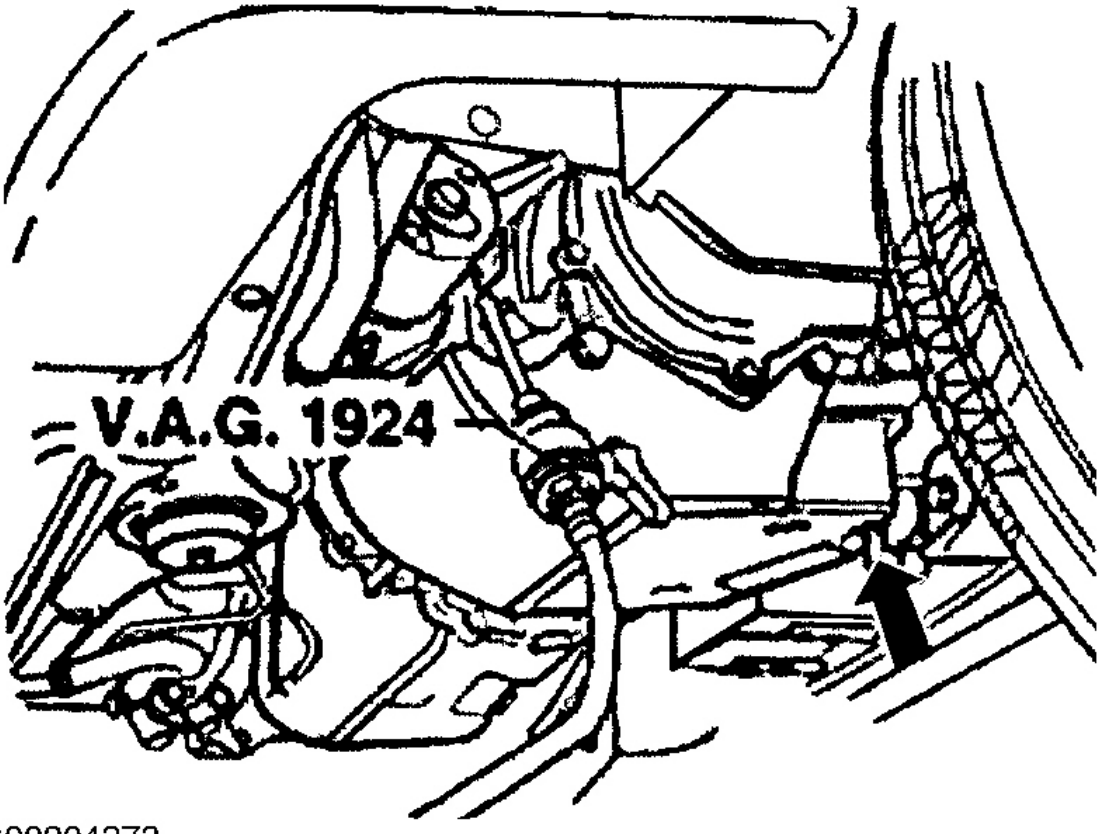

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Fig. 6: Filling Transaxle Using VAG 1924 Filling System (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

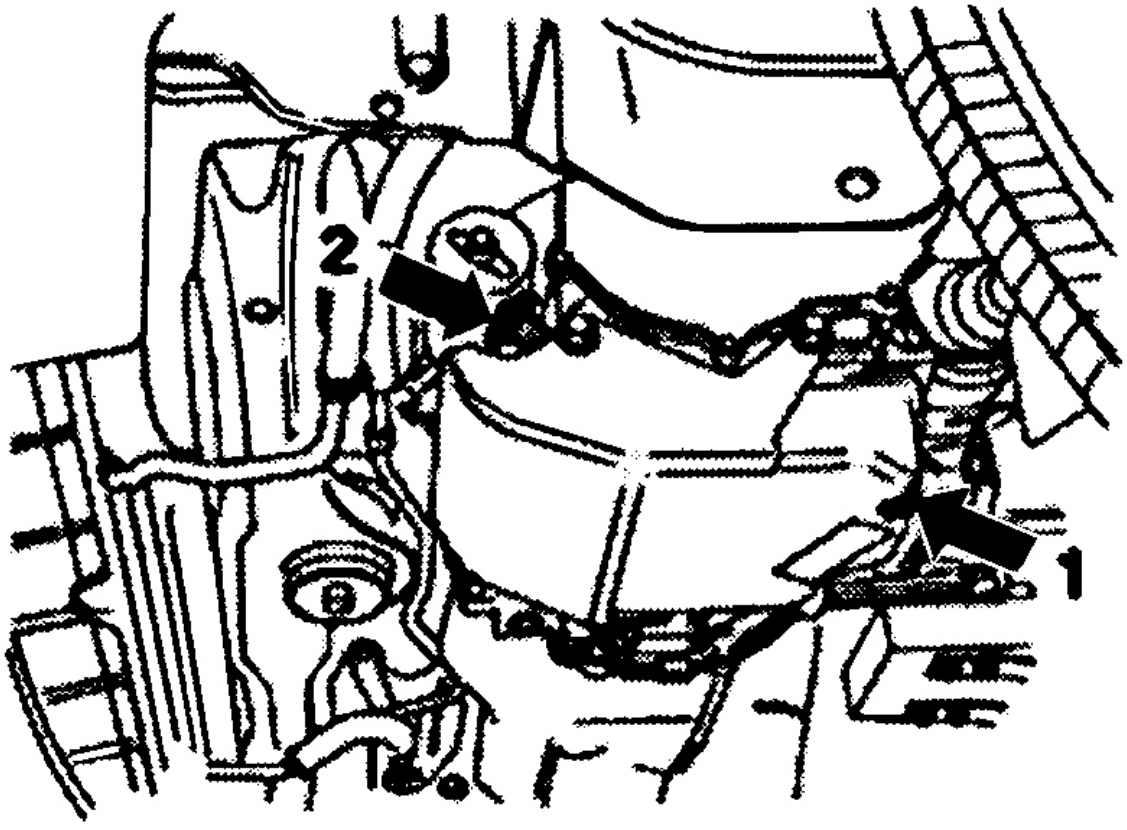

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Fig. 7: Installing New Seal & Cap (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

01M Transaxle (Golf, GTI, Jetta & New Beetle)

NOTE: When ATF level is checked, the seal on the level plug must always be replaced. VAG Scan Tool (1551) and Diagnosis Cable (1551/3A) are required to check ATF level. Scan tool is used to measure ATF temperature. Follow aftermarket scan tool manufacturer instructions (if applicable) to check ATF temperature.

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

1. Prior to checking ATF level, ensure transaxle ATF temperature is not above about 86°F (30°C). Park vehicle on level surface. Set selector lever to Park. Remove sound insulation tray. Remove sound insulation from left longitudinal member. Apply parking brake. Connect ATF reservoir from VAG 1924 filling system to vehicle.
2. Remove Data Link Connector (DLC) cover located below stereo. Connect Scan Tool VAG 1551 with Diagnosis Cable (1551/3A) to DLC. Scan tool will display "VAG ON BOARD DIAGNOSTIC HELP" along with "1- Rapid data transfer" and "2- Blink code output". These outputs will appear alternately. Start engine. Press key 1 for "Rapid data transfer" mode. Press keys 0 and 2 to select address word "Transmission electronics".

3. Confirm entry with "Q" key. Press keys 0 and 8 to select function "Read measured value block". Confirm with "Q" key. Press keys 0, 0 and 5 to select display group number. Confirm with "Q" key. First display indicates ATF temperature. Allow temperature to reach 95-113°F (35-45°C).
4. Raise and support vehicle. Place container under transaxle. Remove ATF level plug (arrow) from oil pan. See **Fig. 3** . A small amount of ATF should drip from overflow line (2) with engine running. See **Fig. 4** . If ATF drips out of hole, ATF does not need to be topped off. Install NEW seal (1) on ATF level plug and tighten to 11 ft. lbs. (15 N.m). Turn engine off. ATF check is complete. Plug (3) and cap (4) remain closed. See **Fig. 4** .
5. If ATF needs to be topped off, remove plug protective cap (arrow) using a screwdriver. See **Fig. 5** . Always replace cap, as cap will be damaged during removal. Remove plug from filler line.
6. **NOTE: An insufficient amount of ATF, as well as filling ATF to excess, affects the function of the transaxle.**

   Using ATF Filling System (VAG 1924), add ATF until fluid runs out of level plug hole (arrow). See **Fig. 6** . Install NEW seal (1) to level plug and tighten to 11 ft. lbs. (15 N.m). See **Fig. 7** . Install sealing plug on filler pipe and secure with a NEW cap (2). See **Fig. 7** . Lock cap in place. The cap secures the sealing plug.

01V Transaxle

NOTE: VAS Scan Tool (5051) is required to check ATF level. Scan tool is used to measure ATF temperature. Follow aftermarket scan tool manufacturer instructions (if applicable) to check ATF temperature.

NOTE: Models equipped with V8 engine use a secondary ATF cooler. An additional test procedure is required for this vehicle when checking fluid level. Test procedure is performed in step 6 .

1. Ensure all electrical components are switched off. Ensure transaxle ATF temperature is not above about 86°F (30°C). Park vehicle on level surface. Set selector lever to Park. Apply parking brake. Remove noise insulation tray. See **Fig. 25** . Connect ATF reservoir from VAG 1924 filling system to vehicle.
2. Connect Scan Tool VAS 5051 to Data Link Connector (DLC), located under left side of instrument panel. Turn ignition on. Select mode of operation. Press button on touch screen for "Vehicle self-diagnosis". Select vehicle system. Select "02 - transmission electronics". Interact with system to confirm control module number of system selected. Select diagnostic function. At this point, all diagnostic functions are available.
3. Select "08 - read measured value blocks" on touch screen. Select display group 4 via "Read Measured value block" and "Change display group number". The upper display zone shows ATF temperature. Ensure transaxle ATF temperature is not above about 86°F (30°C). Start engine. On models with V8 engine, go to step 6 . On all other models, go to next step.
4. Raise and support vehicle. Place drain pan under transaxle. Allow temperature to reach 95-113°F (35-45° C). Remove ATF inspection plug from oil pan. See **Fig. 8** . A small amount of ATF should drip from inspection hole with engine running. If level is okay, install NEW seal on inspection plug and tighten to

59 ft. lbs. (80 N.m). Turn engine off.

5. If additional fluid is required, using ATF Filling System (VAG 1924), carefully insert fill hose through an opening in the deflector cap. See **Fig. 15** . Ensure deflector cap is not pushed upward out of position. Fill until ATF runs out of inspection hole. Use VW ATF fluid only. DO NOT use any lubricant additives. Install NEW seal on inspection plug and tighten to 59 ft. lbs. (80 N.m). Turn engine off.
6. On models with V8 engine, let engine run until ATF temperature reaches at least 185°F (85°C). It may be necessary to test drive vehicle to increase ATF temperature. The thermostat at inlet to secondary ATF cooler does not open until temperature reaches 176°F (80°C). ATF will then flow into cooler. Ensure ATF is at test temperature. Turn engine off and let ATF cool down until temperature is less than 95°F (35°C). Check ATF level and add fluid as needed as described in steps 4 and 5 .

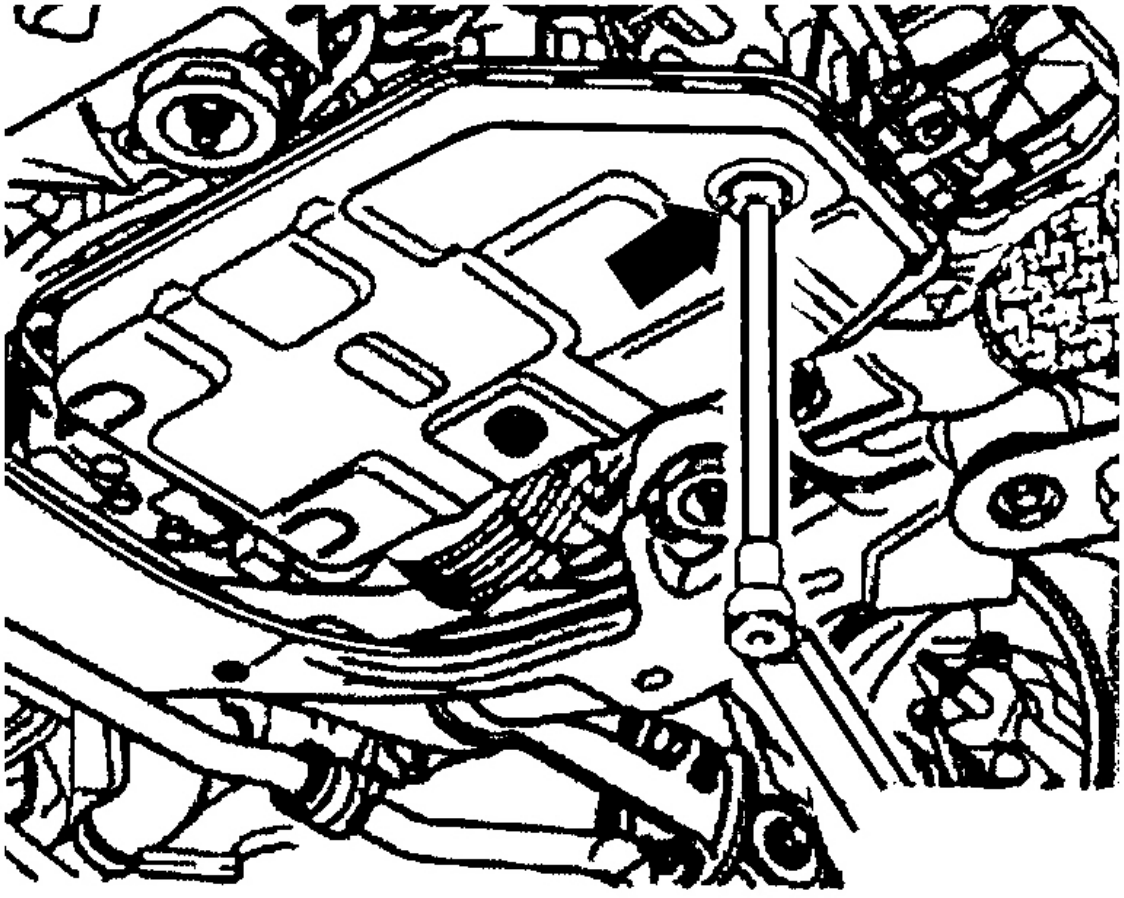

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Fig. 8: Removing & Installing ATF Inspection Plug (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Final Drive (01M Transaxle)

NOTE: Final Drive oil is checked with transmission installed.

NOTE: Excess oil can be drawn off using oil extraction system (V.A.G. 1358 A) or

similar.

Park vehicle on level surface. Remove speedometer drive. Wipe clean and reinstall. Remove speedometer drive and check oil level. Oil must be between MIN and MAX markings. See **Fig. 9** . Add appropriate fluid as required. See **RECOMMENDED FLUIDS** .

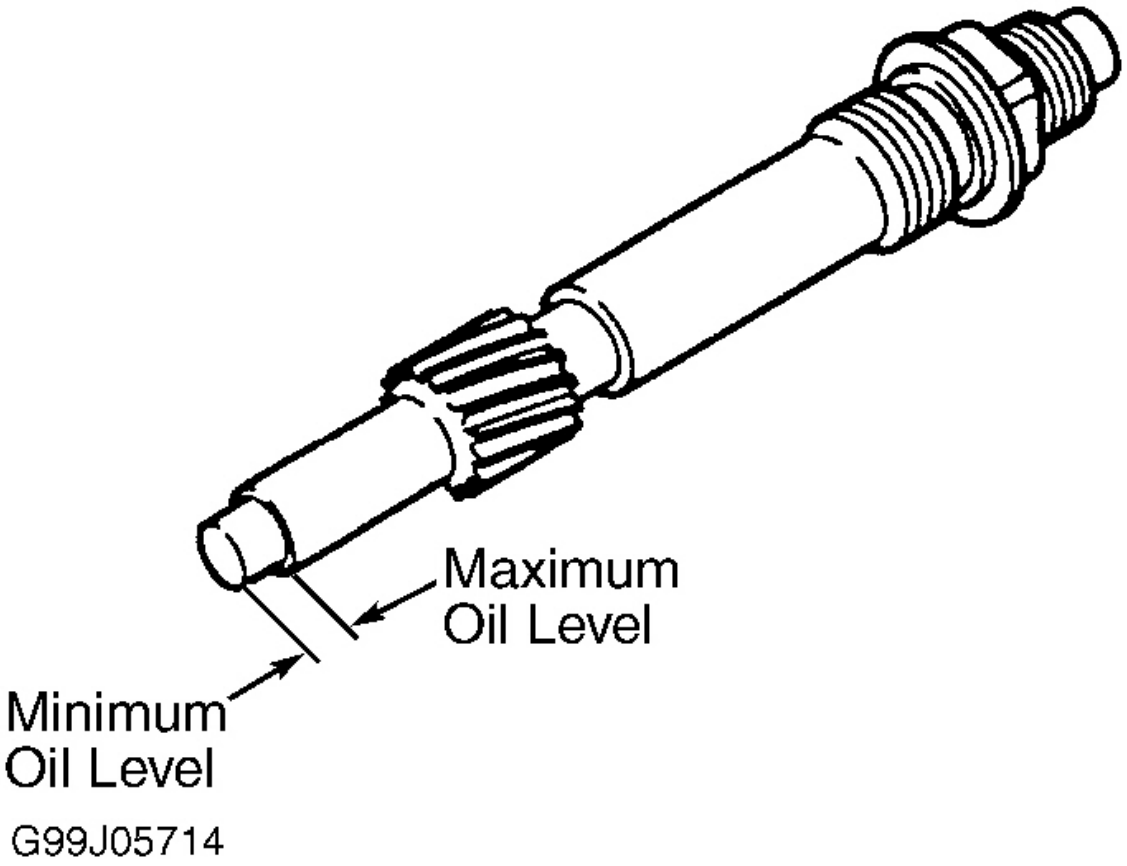

Fig. 9: Minimum & Maximum Marks On Speedometer Drive (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Front Final Drive (01V Transaxle FWD)

1. Drive vehicle a short distance to warm up gear oil. Position vehicle on level surface (4-post hoist or over pit). Turn engine off and let gear oil drain for 5 minutes. On vehicles equipped with TDI engine, remove right drive axle noise insulation from wheel housing. See **Fig. 10** . On all vehicles, place drain pan under final drive. Remove fill plug (arrow) on side of final drive. See **Fig. 11** . Gear oil level should be at lower edge of fill hole. Add appropriate fluid as required. See **RECOMMENDED FLUIDS** . Install fill plug and tighten to 22 ft. lbs. (30 N.m).

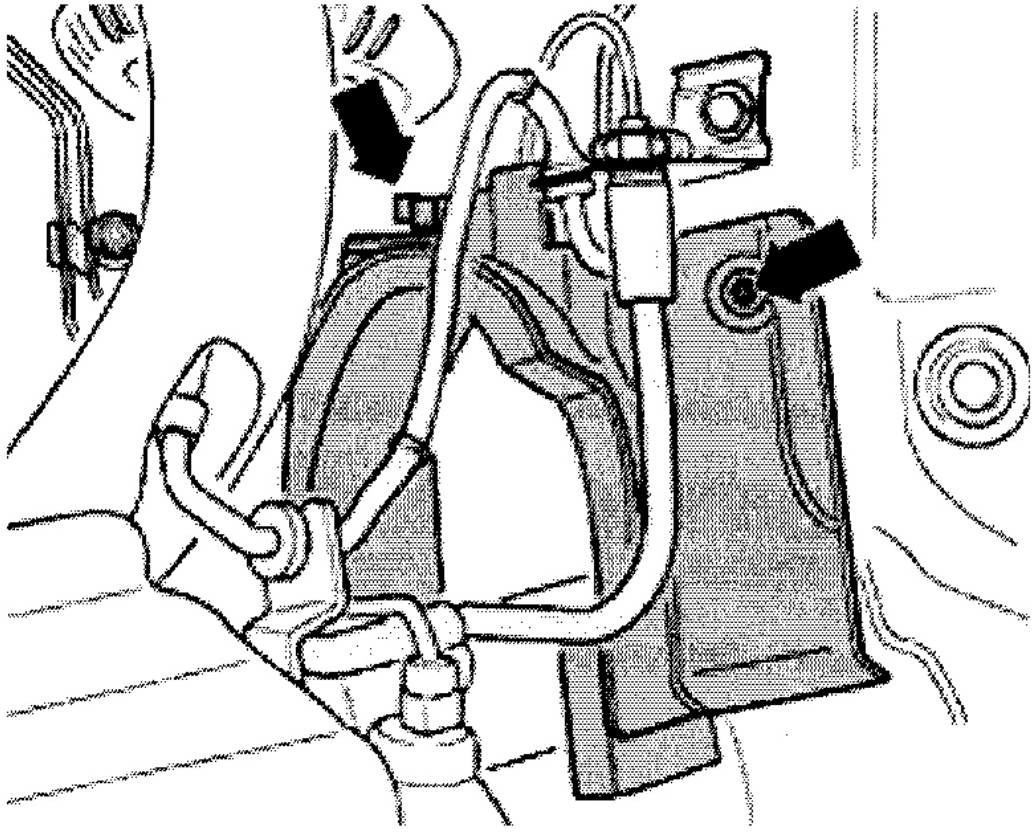

Fig. 10: Removing & Installing Right Drive Axle Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2. If gear oil needs to be replenished following final drive repair, fill front final drive slowly and evenly over a period of at least 5 minutes until gear oil drips out over lower edge of fill hole. A filling time of at least 5 minutes is necessary to allow gear oil time to settle evenly in differential and cavities. On vehicles equipped with TDI engine, install right drive axle noise insulation on wheel housing.

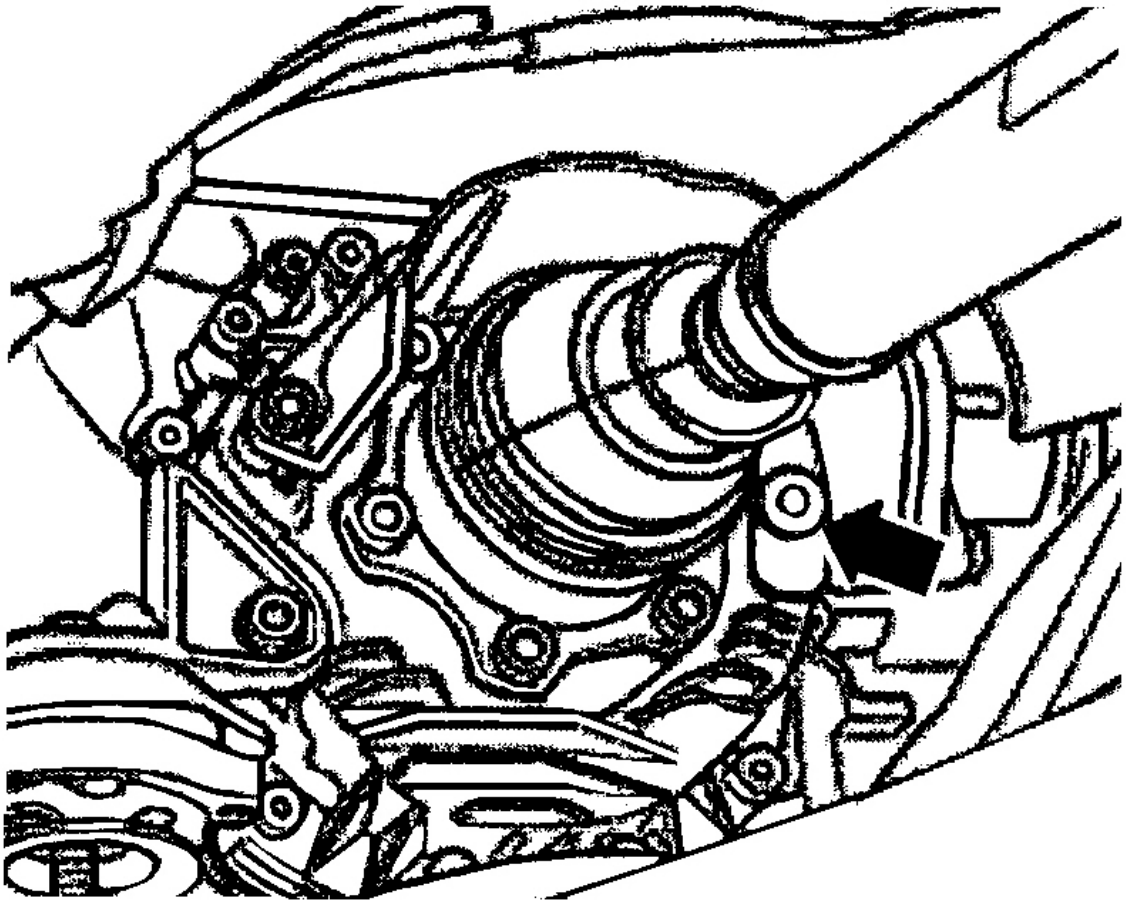

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Fig. 11: Checking Front Final Drive Oil Level (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Center Differential (01V Transaxle AWD)

NOTE: Passat equipped with All Wheel Drive (AWD) is equipped with center differential.

1. Position vehicle on level surface (4-post hoist or over pit). On all vehicles except vehicles equipped with TDI engine, separate right exhaust pipe from rear exhaust system at front double clamp. Push front exhaust pipe in area of catalytic converter to right side of vehicle. On all vehicles, place drain pan under center differential. Remove fill plug (B) and check gear oil level. See **Fig. 12** .
2. Gear oil level should be at lower edge of fill hole. Add appropriate fluid as required. See **RECOMMENDED FLUIDS** . Install fill plug and tighten to 26 ft. lbs. (35 N.m).

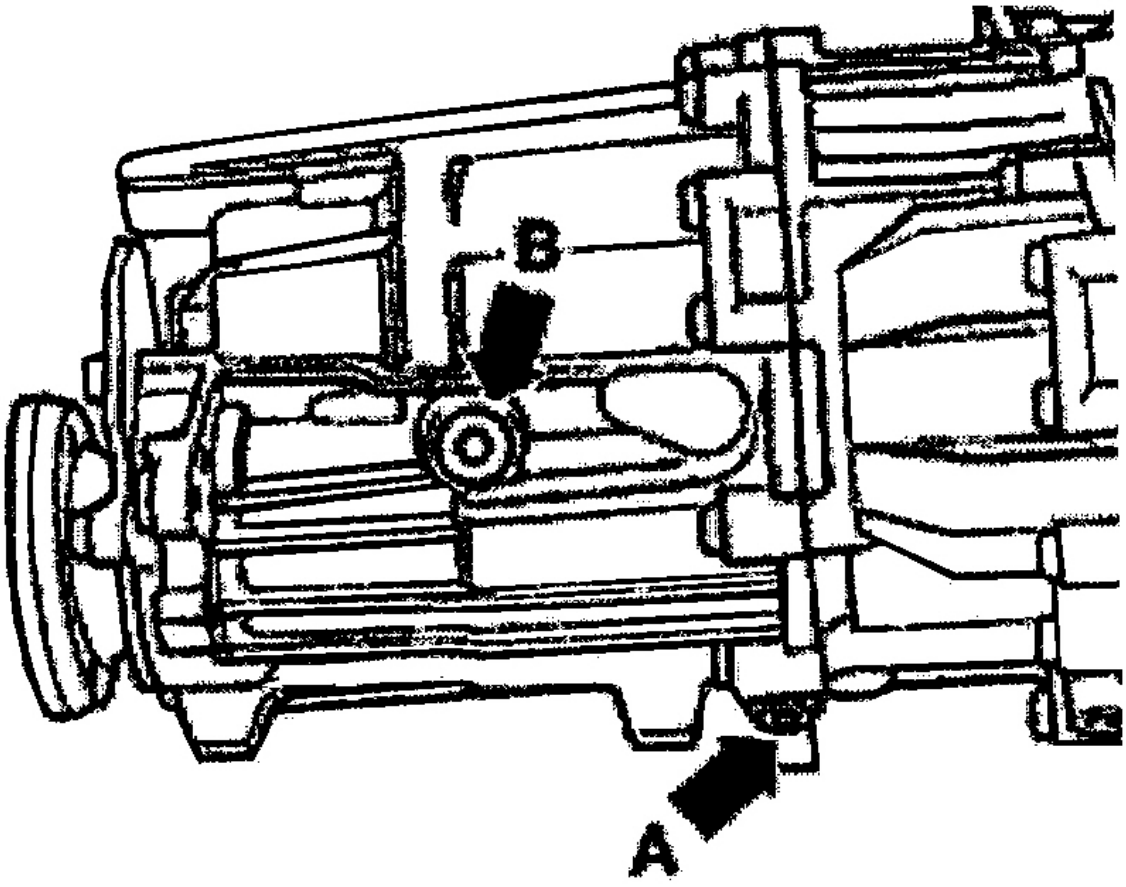

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Fig. 12: Checking Center Differential Oil Level (01V Transaxle - AWD)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Rear Final Drive (01V Transaxle AWD)

NOTE: Passat equipped with All Wheel Drive (AWD) is equipped with rear final drive.

Position vehicle on level surface (4-post hoist or over pit). Place drain pan under rear final drive. Remove fill plug (arrow) to check gear oil. See **Fig. 13** . Oil level is correct when the rear final drive is filled to the lower edge of the fill hole. Install plug and tighten to 26 ft. lbs. (35 N.m).

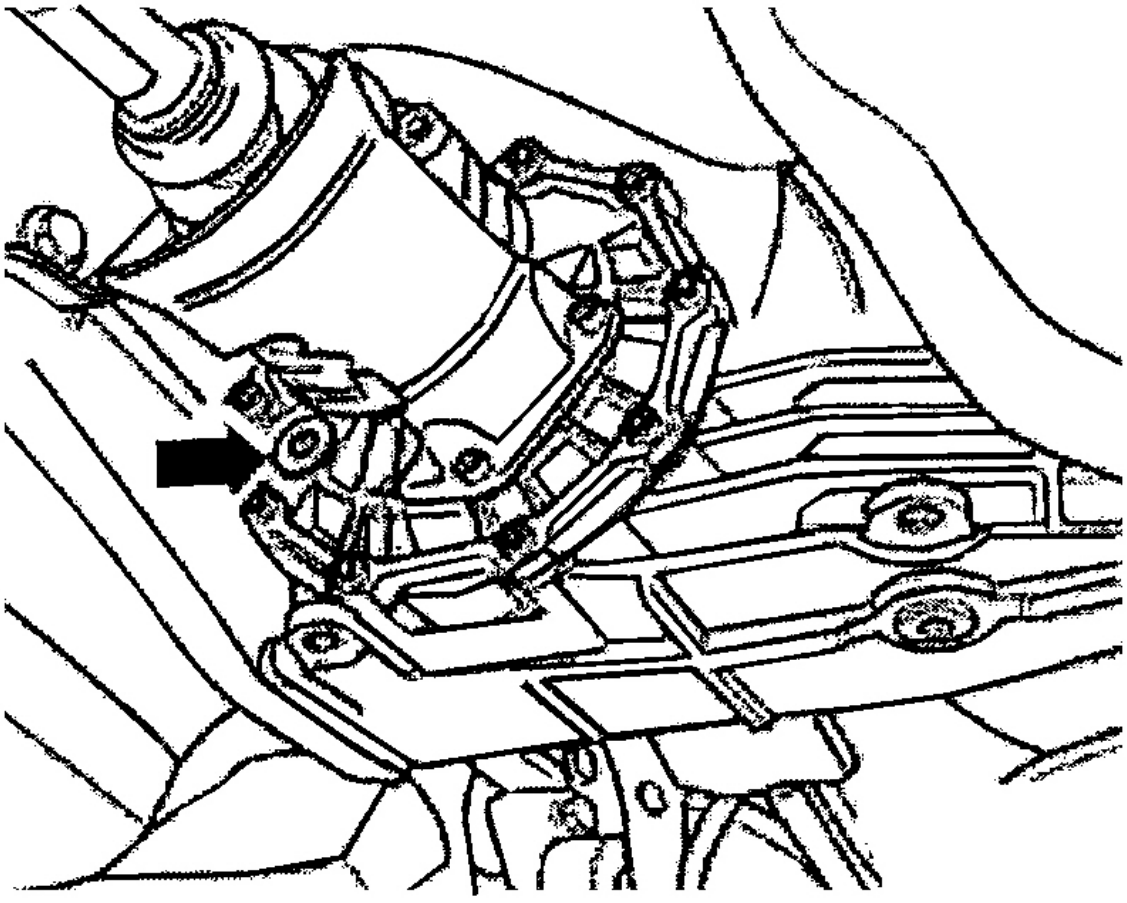

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Fig. 13: Checking Rear Final Drive Oil Level (01V Transaxle - AWD)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

RECOMMENDED FLUIDS

RECOMMENDED FLUIDS

Application	Fluid Type
Transaxle (01M & 01V)	(1) VW ATF (G 052 162 A2)
Final Drive	(2) G 50, SAE 75W-90 (G 052 145 S2)

(1) Fluid is Light Yellow in color.

(2) Synthetic oil. Includes Passat AWD front and rear final drive, and center differential.

FLUID CAPACITIES

TRANSAXLE FLUID CAPACITIES

Application	Refill - Qts. (L)	Dry-Fill - Qts. (L)
01M	3.2 (3.0)	5.6 (5.3)

01V	2.7 (2.6)	9.5 (9.0)

FINAL DRIVE & CENTER DIFFERENTIAL FLUID CAPACITIES

Application	Qts. (L)
Final Drive (All Models) (1)	.8 (.75)
Center Differential (Passat AWD)	.9 (.80)
Rear Final Drive (Passat AWD)	1.6 (1.5)
(1) Includes Passat AWD front final drive.	

DRAINING & REFILLING

01M Transaxle (Cabrio)

1. Place container under transaxle. Remove ATF level plug from oil pan. See **Fig. 3** . Remove overflow line through level plug hole. Drain ATF. Install overflow line. Install ATF level plug and hand tighten.
2. Add correct amount of appropriate ATF through filler line. See **RECOMMENDED FLUIDS** and **FLUID CAPACITIES** . Start engine and shift through all selector lever positions with vehicle stationary. Check fluid level. See **CHECKING FLUID LEVELS** . Add ATF as necessary. Tighten ATF level plug to 11 ft. lbs. (15 N.m).

01M Transaxle (Golf, GTI, New Beetle & Passat)

1. Remove sound insulation tray. Remove sound insulation from left longitudinal member. Place container under transaxle. Remove ATF level plug from oil pan. See **Fig. 3** . Remove overflow line through plug hole. Drain ATF. Install overflow line. Install ATF level plug and hand tighten.
2. Add correct amount of appropriate ATF through filler pipe. See **RECOMMENDED FLUIDS** and **FLUID CAPACITIES** . Start engine and shift through all selector lever positions with vehicle stationary. Check fluid level. See **CHECKING FLUID LEVELS** . Add ATF as necessary. Tighten ATF level plug to 11 ft. lbs. (15 N.m).

01V Transaxle

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

1. Ensure all electrical components are switched off. Ensure transaxle ATF temperature is not above about 86°F (30°C). Park vehicle on level surface. Set selector lever to Park. Apply parking brake. Remove noise insulation tray. See **Fig. 25** . Connect ATF reservoir from VAG 1924 filling system to vehicle. Raise and support vehicle. On vehicles equipped with auxiliary heater, remove exhaust pipe bolts at noise insulation. On all vehicles, place drain pan under transaxle. Remove drain plug (1). See **Fig. 14** . Drain ATF. Install NEW seal on drain plug. Install drain plug and tighten to 30 ft. lbs. (40 N.m).
2. Remove ATF inspection plug (2). See **Fig. 14** . Using ATF Filling System (VAG 1924), carefully insert fill hose through an opening in deflector cap. See **Fig. 15** . Ensure deflector cap is not pushed upward out of position. Fill until ATF runs out of inspection hole.
3. Shift selector lever into "P" position. Start engine. Press and hold brake pedal. Shift through all selector

lever positions with vehicle stationary, leaving selector lever in each position for about 10 seconds, and ending in "P" position. Check fluid level and add ATF as necessary. Replace seal on ATF inspection plug. Tighten inspection plug to 59 ft. lbs. (80 N.m).

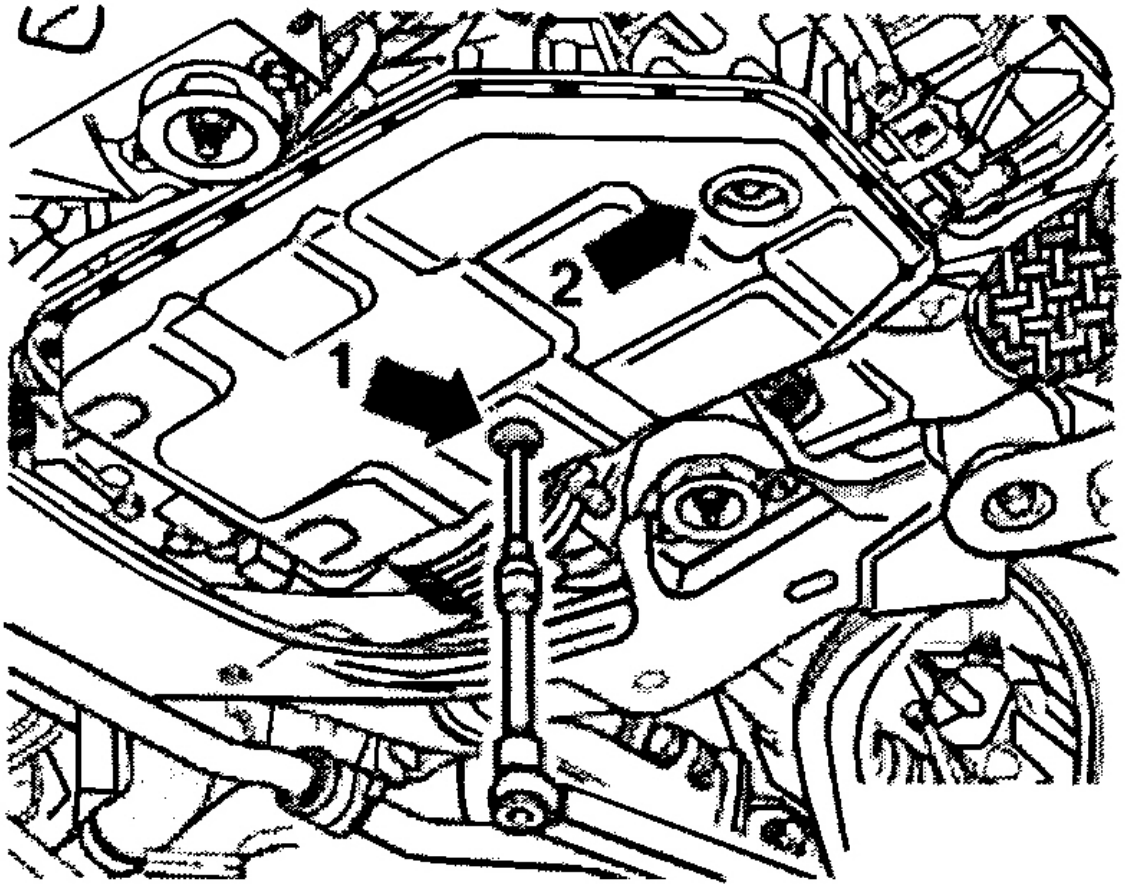

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Fig. 14: Removing & Installing Drain & Inspection Plug (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

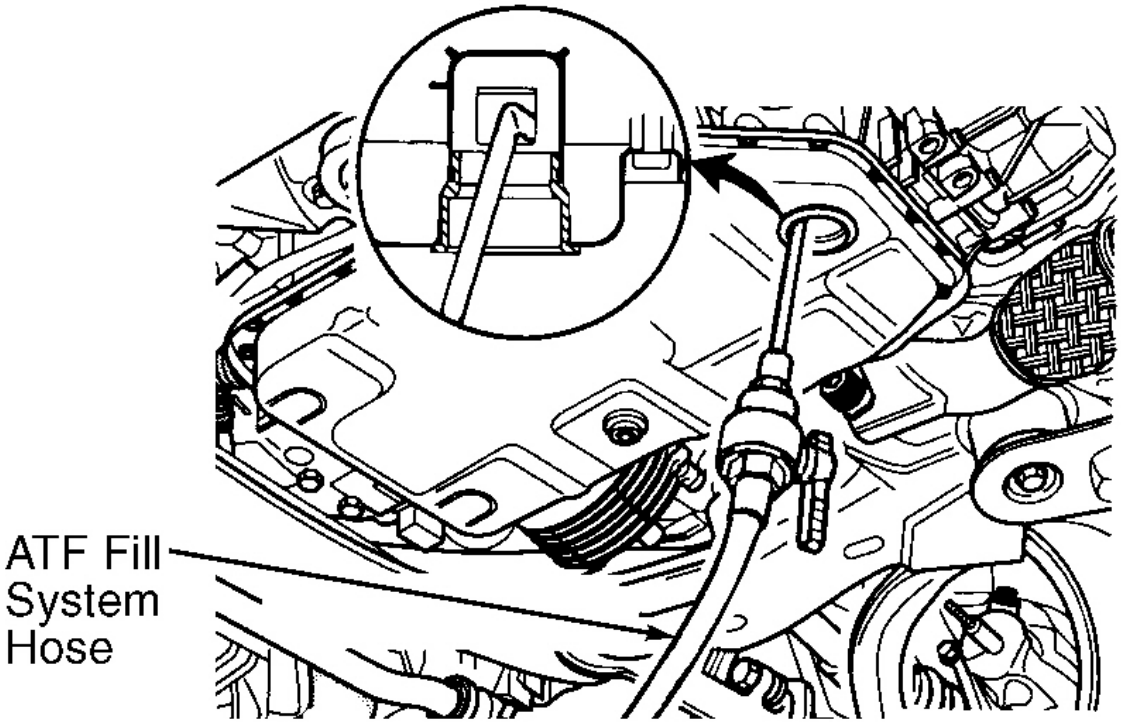

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Fig. 15: Filling Transaxle Using ATF Filling System VAG 1924 (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ATF LINES & ATF COOLER FLUSHING

01V Transaxle

CAUTION: Wear appropriate protective glasses.

NOTE: In the following procedures, letters and numbers in parenthesis are shown in illustrations.

1. If there is debris in the ATF, blow through the ATF cooler and ATF lines with compressed air before installing transaxle. Release bracket for rigid ATF lines on transaxle.
2. Remove bolt (2). See **Fig. 16** . Pull ATF lines off transaxle. Connect a hose to ATF pipe (A) and secure with a hose clamp. Hang other end of hose in a suitable container. Clear ATF line (B) with compressed air. Change hose from ATF pipe (A) over to ATF pipe (B) and repeat sequence.
3. Prior to installing ATF lines to transaxle, replace "O" rings (1). Moisten "O" rings with ATF. Insert ATF lines completely by hand onto stop in transaxle. Do not tighten bolt until ATF lines are completely inserted. Tighten bolt to 15 ft. lbs. (20 N.m). Check and top up ATF level. See **CHECKING FLUID LEVELS** . When checking ATF level, check ATF line connections (A) and (B) for leaks.

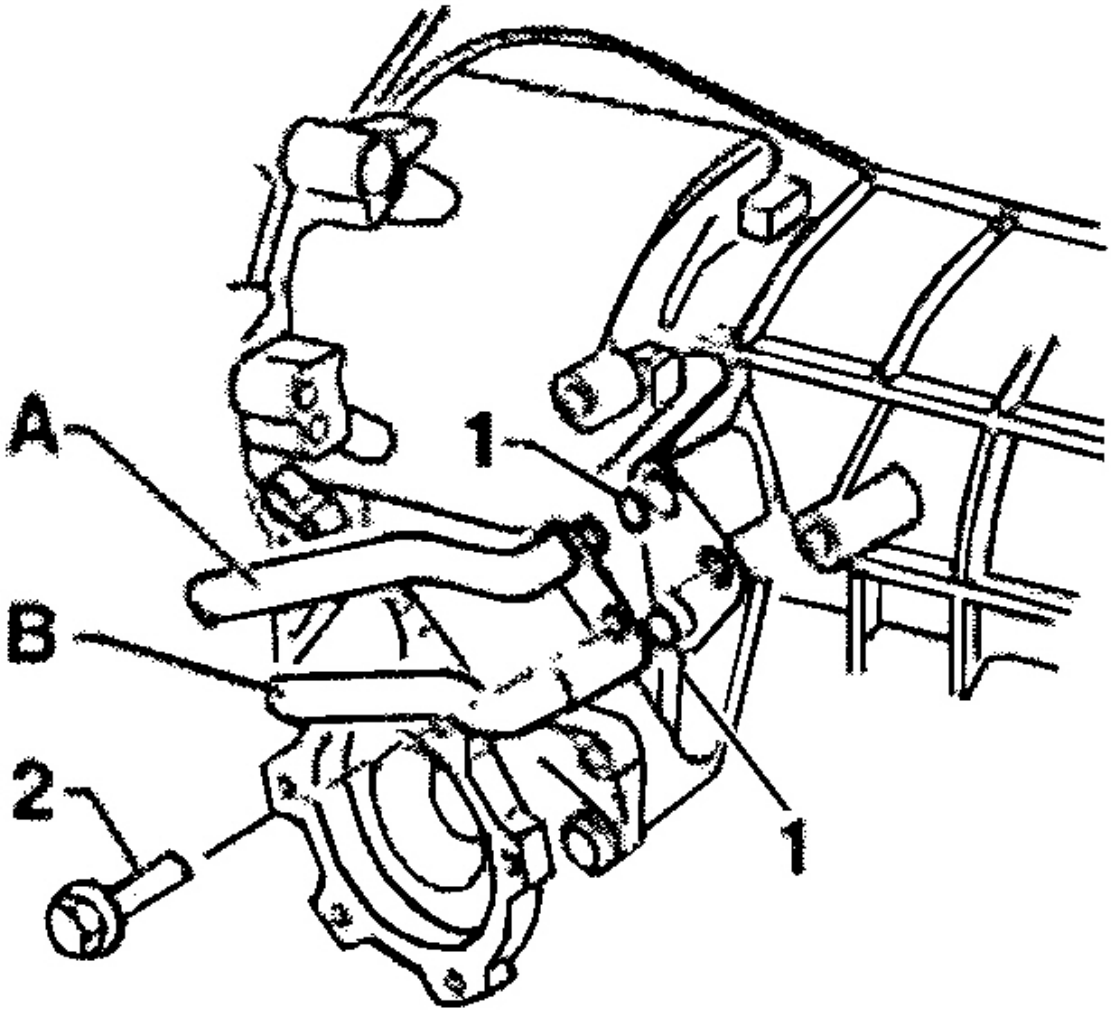

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Fig. 16: Removing ATF Lines From Transaxle (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

ON-VEHICLE REPAIRS

NOTE: **Various components may be serviced without transaxle removal. For servicing of these components, see appropriate component under ADJUSTMENTS and/or REMOVAL & INSTALLATION .**

ADJUSTMENTS

LOCKING CABLE

01M Transaxle (Cabrio)

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

NOTE: Locking cable must always be adjusted in installation position. See Fig. 17 .

1. Shift selector lever to "1" position. Turn ignition switch to starting position and release. Adjust clearance to .028" (.70 mm) between lever (1) and locking pin (2) by sliding locking cable casing. See **Fig. 18** . Tighten locking cable anchor screw in this position to 53 INCH lbs. (6 N.m).
2. Shift selector lever into "P" position and turn ignition switch to end (LOCK) position. Remove ignition key. Ensure ignition key cannot be removed in any other selector lever position. Ensure selector lever cannot be shifted out of "P" position without ignition key in LOCK position.

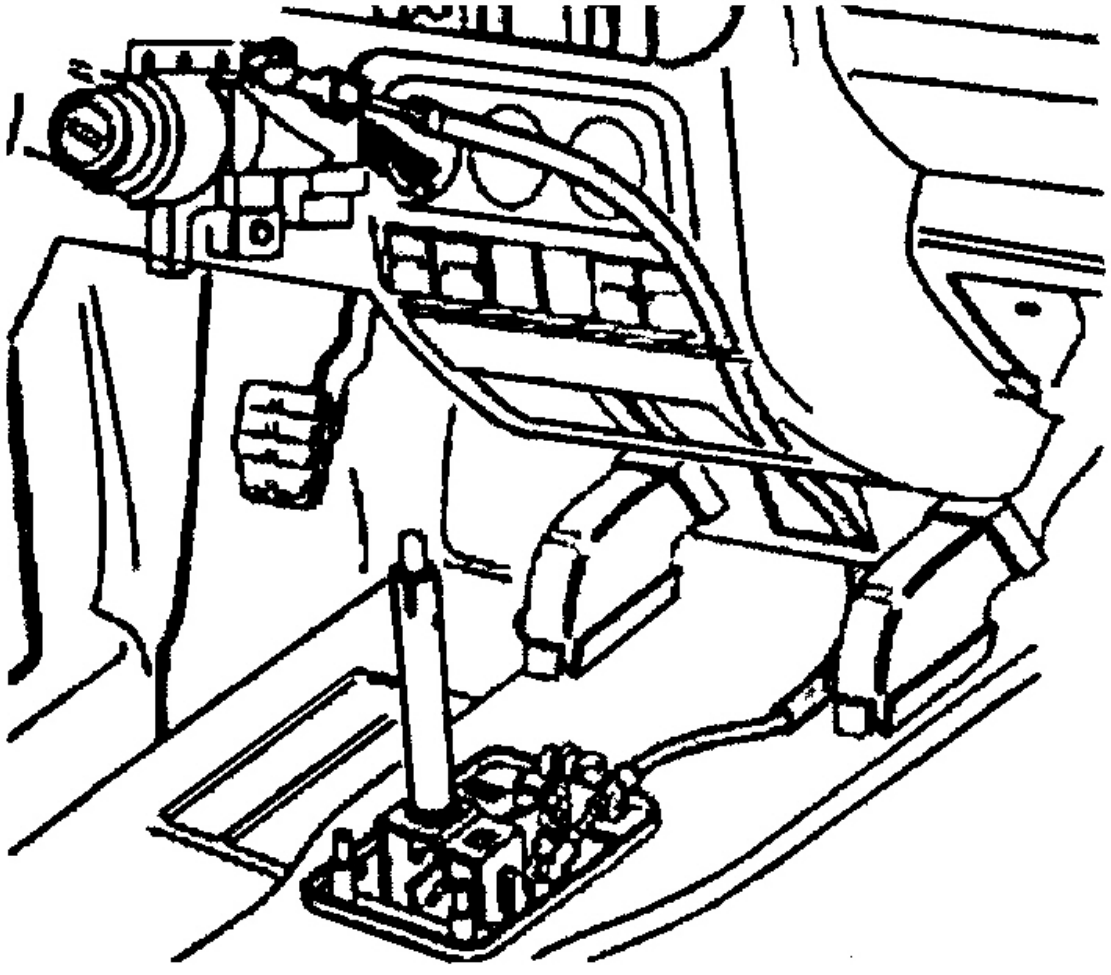

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Fig. 17: Identifying Installation Position Of Locking Cable (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

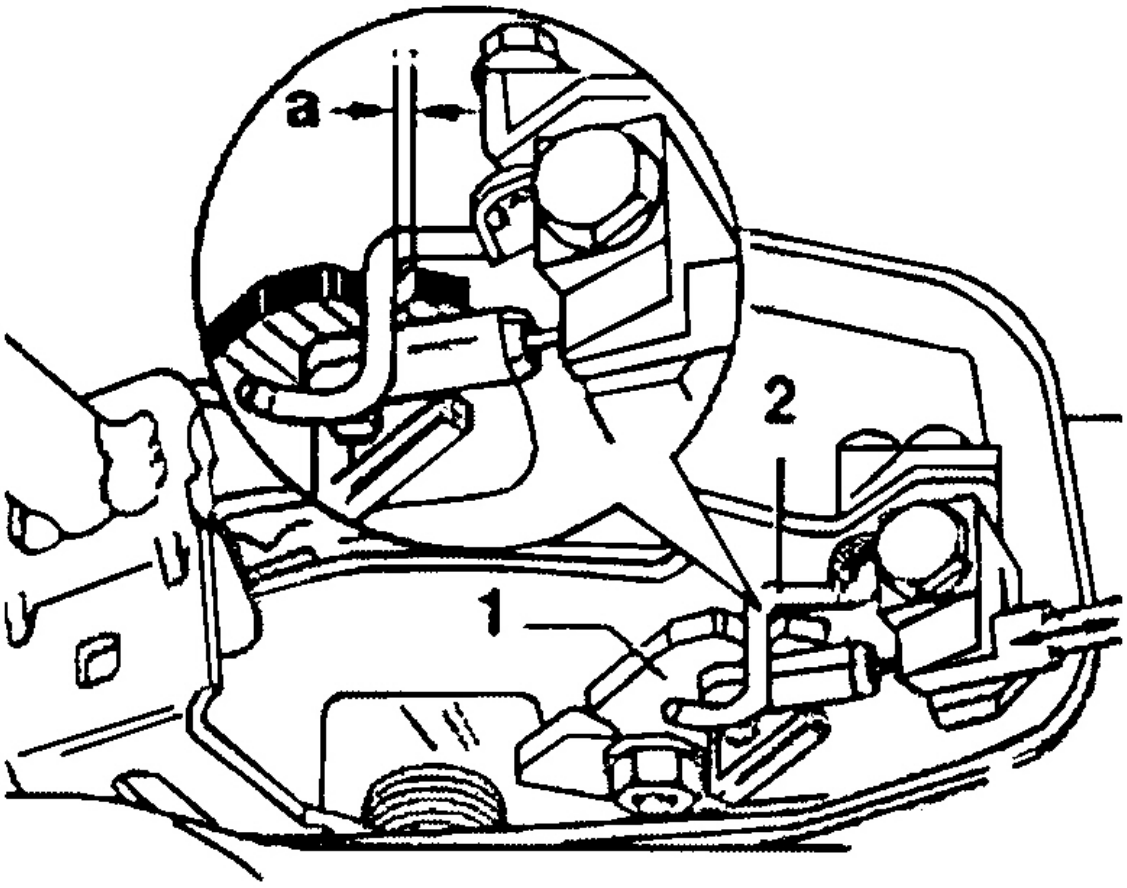

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Fig. 18: Adjusting Locking Cable (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

01M Transaxle (Golf, GTI, Jetta & New Beetle)

NOTE: In the following procedures, numbers in parenthesis are shown in illustration.

1. Ensure cable is routed correctly. Remove center console. Ensure selector lever is in "P" position. Remove ignition key.
2. Slide sliding sleeve forward. Unlatch release clip by pushing up. See **Fig. 19** . Pull connector off (4). Remove sleeve (5) upward. Release selector lever housing cover at 4 retaining tabs (6) by hand and lift off. Carefully pry off 4 corners of frame (7) and remove. See **Fig. 20** .
3. Slide .03" (0.8 mm) feeler gauge between locking lever and selector lever roller. See **Fig. 21** . Pull outer sleeve of locking cable slightly toward front of vehicle (1) and push Red clip down until it engages (2). Push sliding sleeve over clip. Ensure selector lever cannot be moved from "P" position with key removed from ignition.

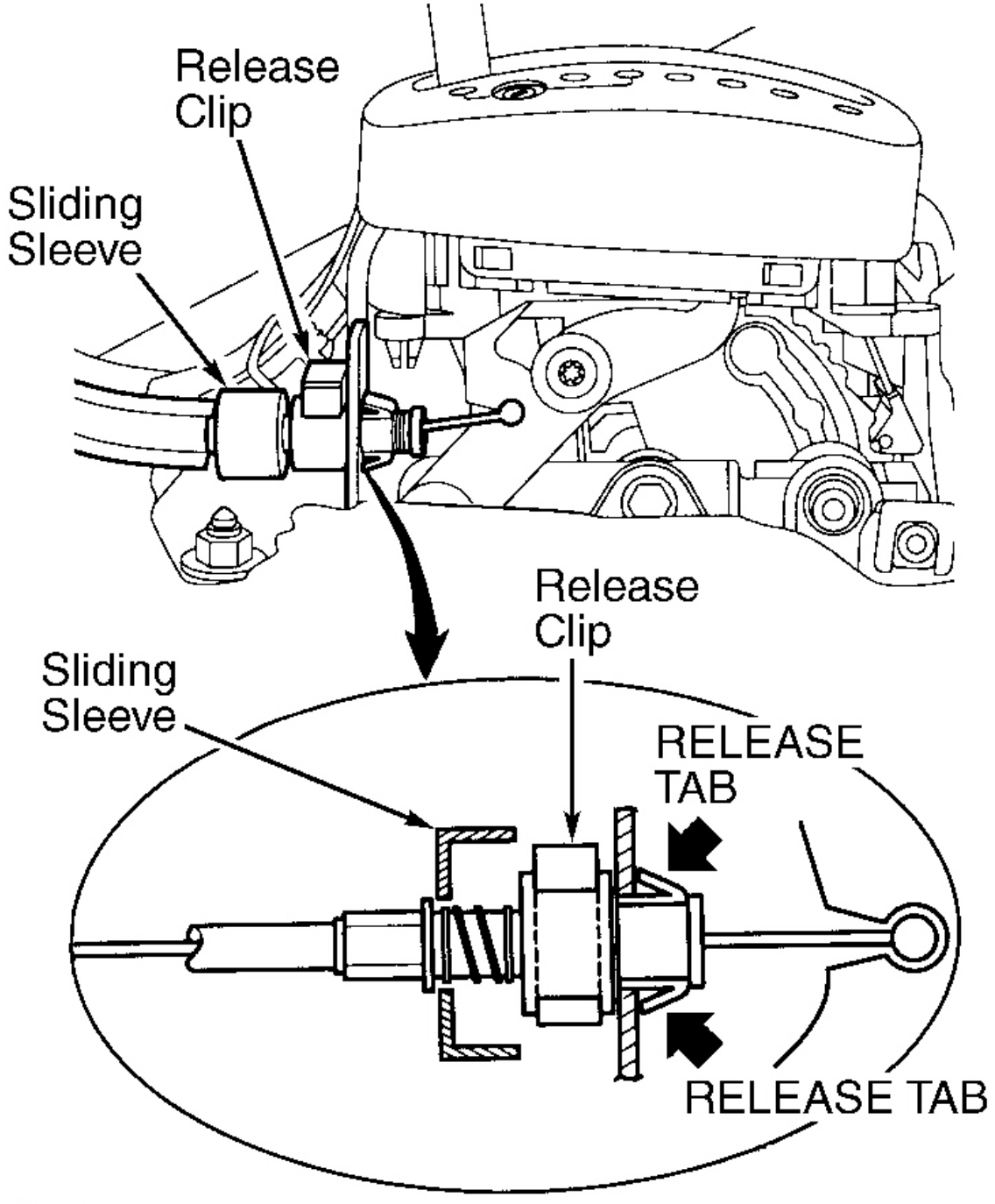

Fig. 19: Adjusting Locking Cable (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

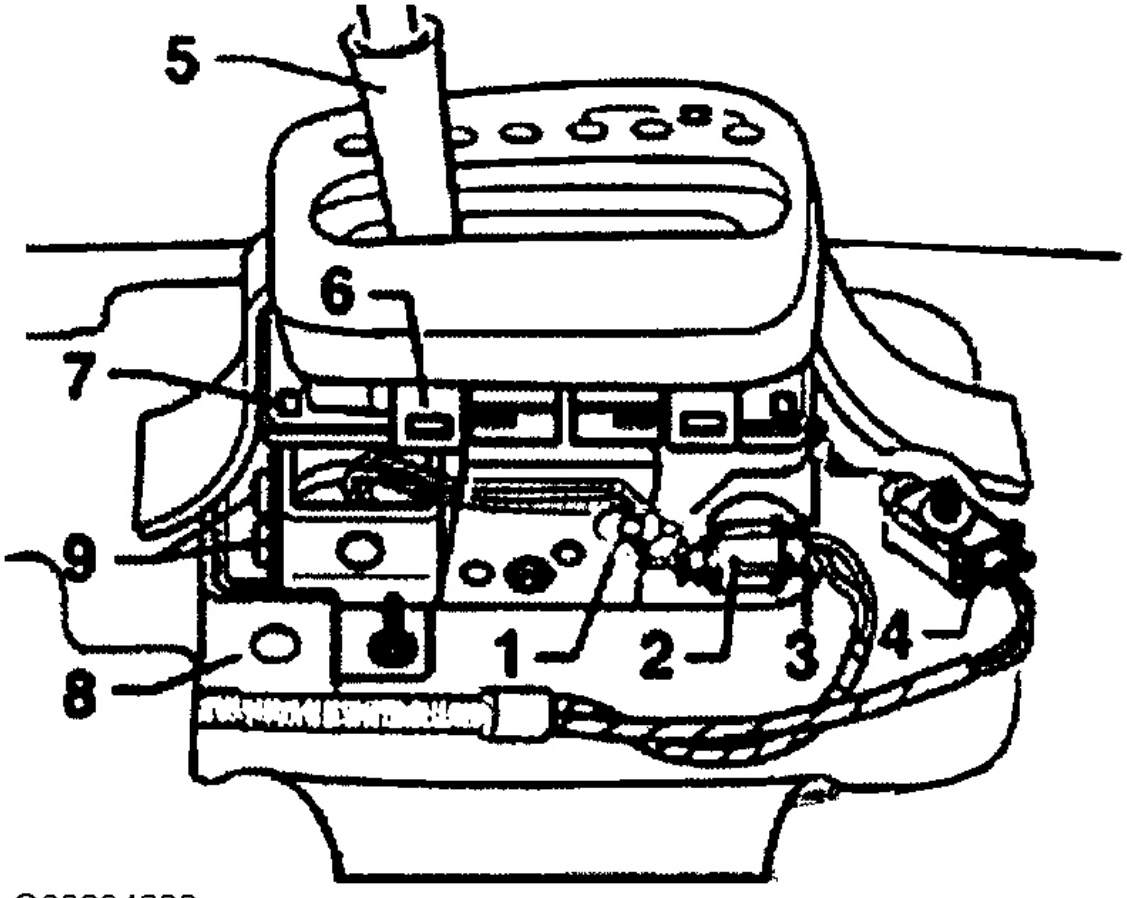

Fig. 20: Releasing Selector Lever Housing Cover At Retaining Tabs (01M Transaxle - Golf, GTI, Jetta & New Beetle)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

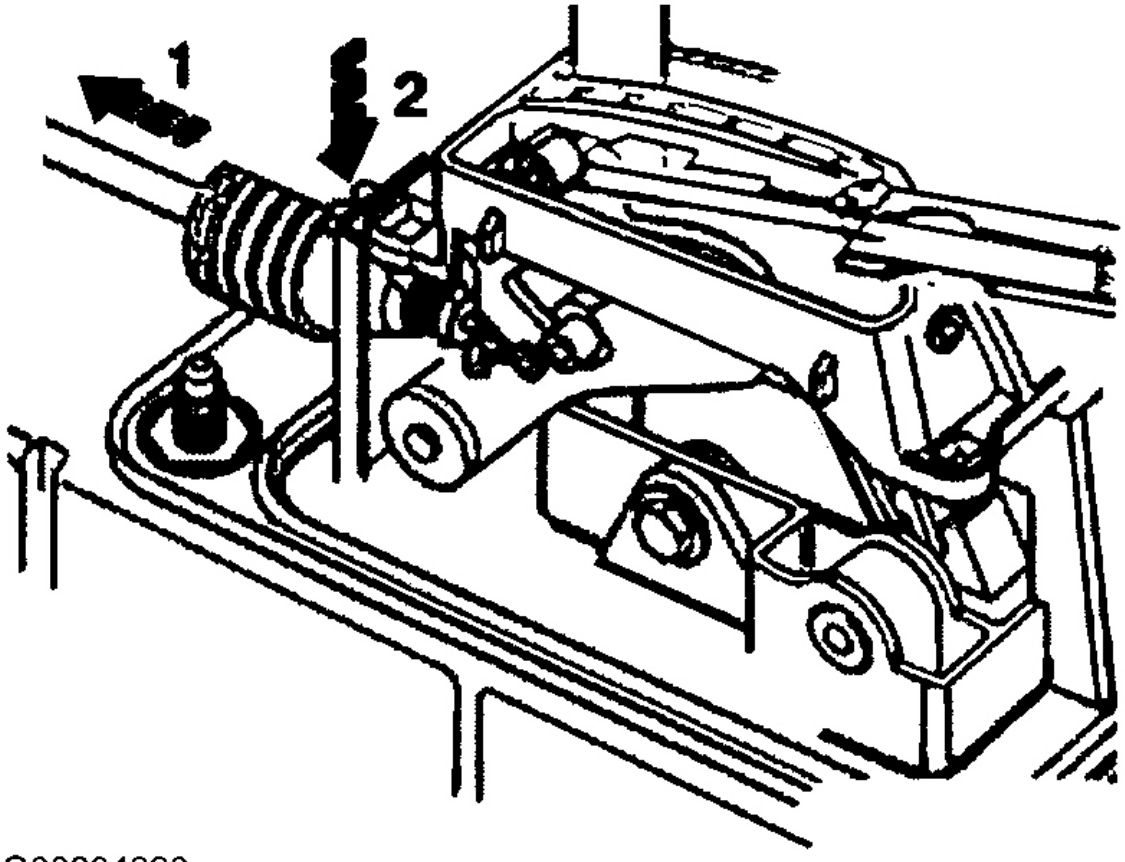

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Fig. 21: Measuring Clearance Between Locking Lever & Selector Lever Roller (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

01V Transaxle

Remove steering column trim. Remove center console. Place gear selector lever in "P" position. Loosen locking cable support bracket bolt. Move steering column down and to rear. Position Setting Bar (3352) between lever and locking cable eye. See **Fig. 22** . Pull locking cable away from gear shift lever (toward front of vehicle) and tighten locking cable support bracket bolt to 89 INCH lbs. (10 N.m). Remove setting bar. Ensure ignition lock key can be easily removed after each adjustment of locking cable.

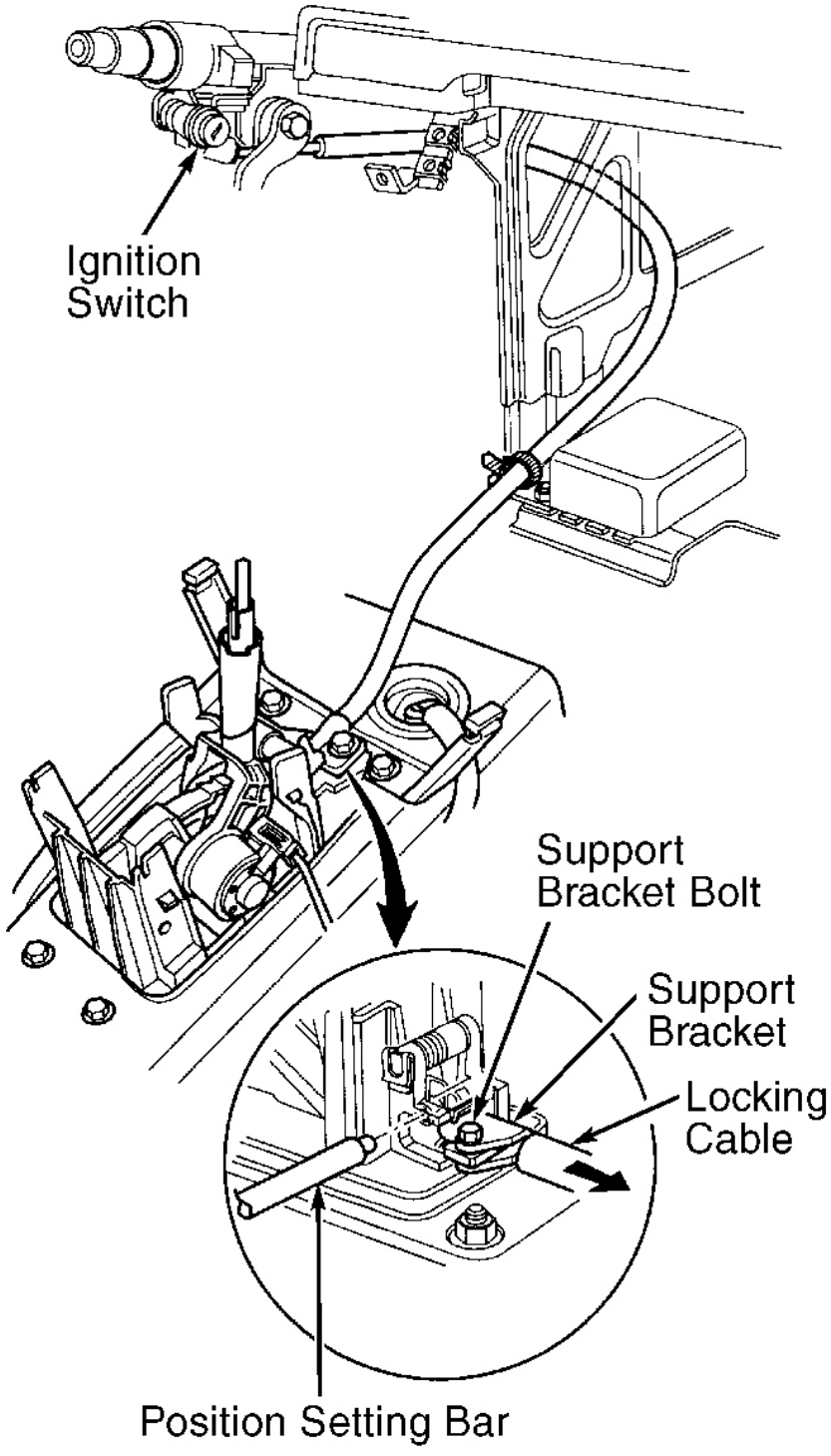

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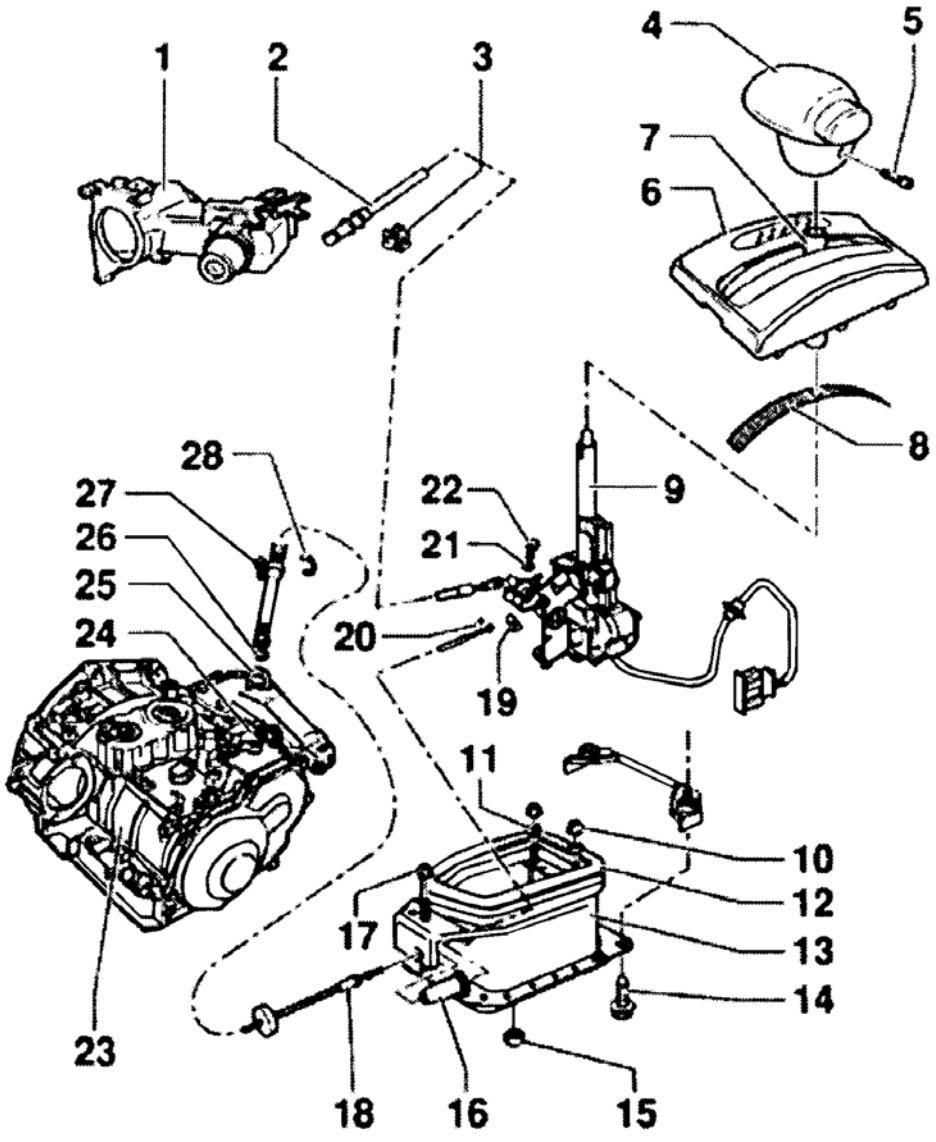
Fig. 22: Adjusting Locking Cable (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

SELECTOR LEVER CABLE

NOTE: In the following procedures, numbers in parenthesis are shown in illustration.

1. To check cable, remove selector lever cable bolt (27) from selector lever shaft. See **Fig. 23** . Move selector lever from "P" to "1" position. Ensure selector lever mechanism moves freely. If necessary, replace selector lever cable or check selector lever mechanism. Always replace selector lever locking washer (28) at transaxle lever after disassembling.
2. To adjust cable, place selector lever in "P" position. Loosen selector lever cable bolt on selector lever shaft. See **Fig. 23** . Shift selector lever/shaft to "P" position. Parking lock should apply and it should not be possible to turn front wheels in same direction. Tighten bolt to 18 ft. lbs. (25 N.m).



1. Ignition Switch
2. Locking Cable
3. Clip
4. Selector Lever Handle
5. Set Screw
6. Cover
7. Sleeve
8. Cover Strip
9. Selector Lever
10. Nuts
11. Spacer
12. Gasket
13. Selector Lever Housing
14. Screw
15. Nut
16. Protective Sleeve
17. Nut
18. Selector Lever Cable
19. Seal
20. Circlip
21. Washer
22. Bolt
23. Transaxle
24. Lever
25. Console
26. Washer
27. Bolt
28. Corrugated Locking Washer

G00204375

Fig. 23: Exploded View Of Selector Mechanism Components (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

01M Transaxle (Golf, GTI, Jetta & New Beetle)

NOTE: In the following procedures, numbers in parenthesis are shown in illustration.

1. To check cable, shift selector lever into "P" position. Pry selector lever cable off lever/selector shaft (4) and route so that end is free to move. See **Fig. 24** . Do not bend or kink the selector lever cable. Move selector lever from "P" to "1" position. Check front protective sleeve on selector lever cable for damage, and replace cable (if necessary). Shift selector lever into "P" position. Selector lever mechanism and selector lever cable must move freely. Replace selector lever cable or service selector lever mechanism, if necessary. Press on selector lever cable.
2. To adjust cable, shift selector lever into "P" position. Loosen bolt (2) at selector lever cable front ball mounting (1). See **Fig. 24** . Bring selector shaft lever into "P" position on transaxle. Locking lever must engage in park lock wheel, and both front wheels are blocked (cannot be turned together in same direction). Tighten bolt (2) to 71 INCH lbs. (8 N.m). Replace circlip (3) if it has been removed. See **Fig. 24** .

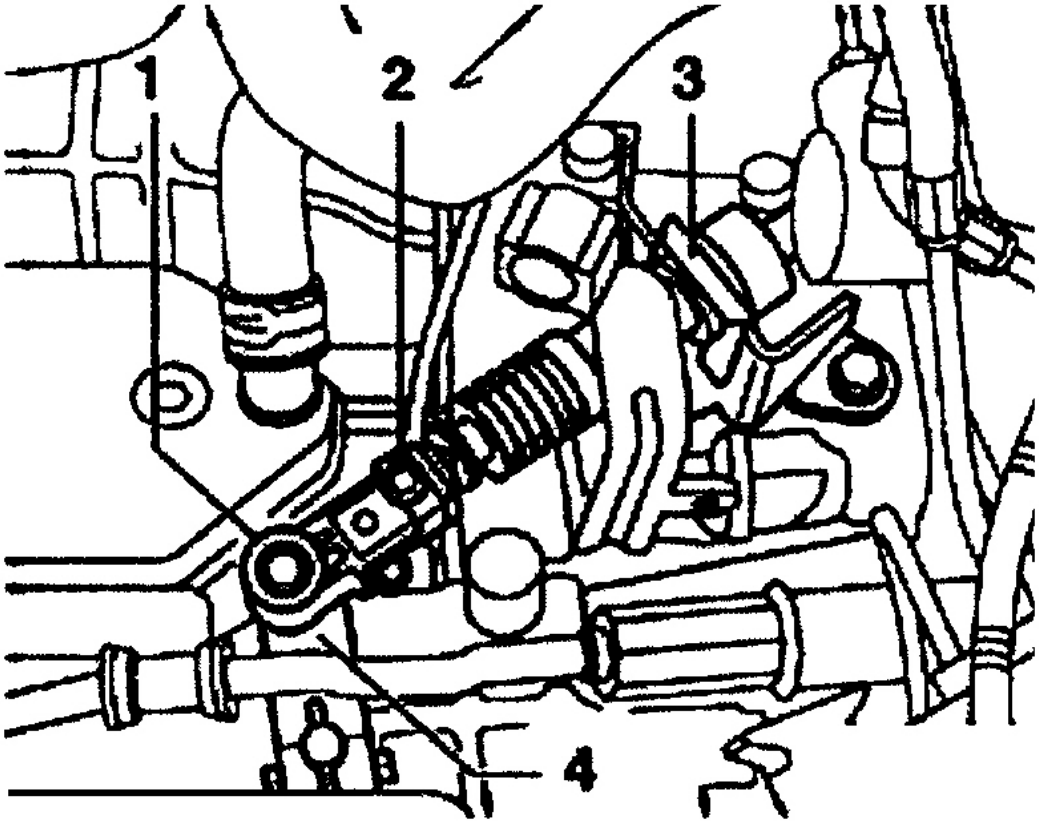


Fig. 24: Adjusting Selector Lever Cable (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

01V Transaxle

1. To check cable, shift selector lever to "P" position. Raise and support vehicle. Remove noise insulation tray. See **Fig. 25** . On vehicles with V6 engine, remove front exhaust system with catalytic converter. Remove selector lever cable protective plate. On all models, remove left hand transaxle bracket.
2. Using a pry bar, remove selector lever cable from selector shaft lever (arrow). See **Fig. 40** . Shift selector lever from "P" to "2" position. Selector lever mechanism and selector lever cable must move freely. Replace selector lever cable or service selector lever mechanism as necessary. Shift selector lever to "P" position.
3. Bring selector shaft lever on transaxle to "P" position. Locking lever must engage in park lock wheel, and both front wheels should be blocked (cannot be turned together in a direction). It should be possible to push the selector lever cable onto the selector shaft lever. Adjust selector lever cable (if necessary).
4. Using a pair of pliers, carefully push the selector lever cable onto the selector shaft lever. When doing this, take care not to bend the selector shaft lever, otherwise the selector mechanism will not be able to be adjusted correctly.
5. To adjust cable, ensure selector lever cable is disconnected from selector shaft lever. Shift selector lever into "P" position. Bring selector shaft lever on transaxle to "P" position. Locking lever must engage in park lock wheel, and both front wheels should be blocked (cannot be turned together in a direction).
6. Loosen bolts (arrows) securing support bracket to transaxle. See **Fig. 26** . Using a pair of pliers, carefully push the selector lever cable onto the selector shaft lever. When doing this, take care not to bend the selector shaft lever, otherwise the selector mechanism will not be able to be adjusted correctly. Align selector lever cable, free of stress, on the support bracket using the oblong holes.
7. Tighten securing bolts for support bracket to 17 ft. lbs. (23 N.m). Check selector lever mechanism operation. Install left hand transaxle bracket. On vehicles with V6 engine, install selector lever cable protective plate. Tighten bolts to 17 ft. lbs. (23 N.m). Install front exhaust system with catalytic converter. On all vehicles, install noise insulation.

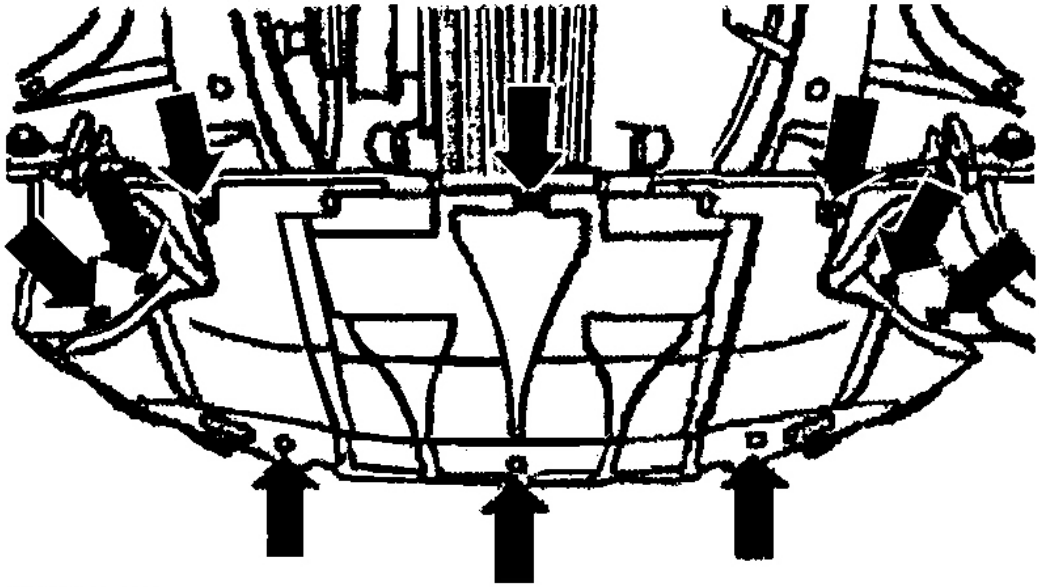


Fig. 25: Removing & Installing Noise Insulation Tray (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

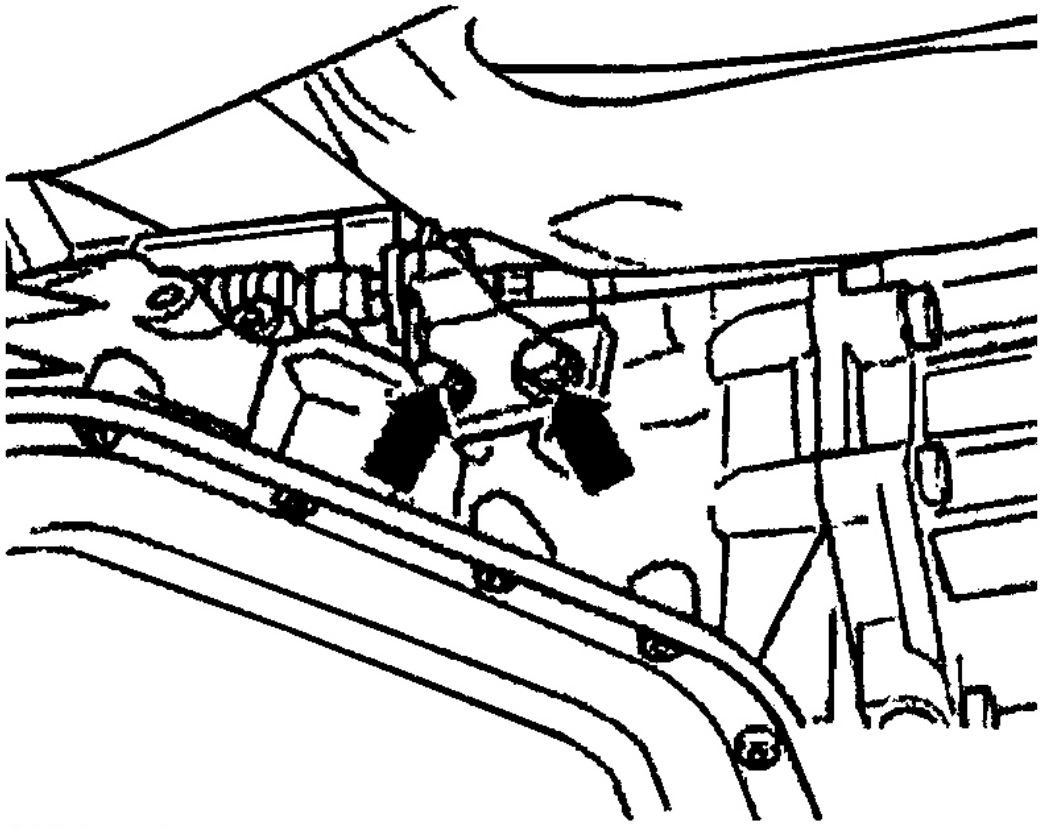


Fig. 26: Removing & Installing Support Bracket Bolts (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

REMOVAL & INSTALLATION

WARNING: Vehicle is equipped with Supplemental Inflatable Restraint (SIR) system. When servicing vehicle, use care to avoid accidental air bag deployment. SIR system-related components are located in various locations throughout interior and exterior of vehicle, depending on application. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SIR system before servicing components. See appropriate AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting

battery.

INTERNAL OIL LINE

Removal & Installation (01V Transaxle)

1. Faulty "O" rings on the internal oil line allow ATF to enter the differential. Differential then becomes overfilled and oil will seep out of the breather holes of the differential. If an oil line is removed, it should generally be replaced. The oil line should only be inserted using Fitting Tool (3381). Otherwise there is a danger of the oil line becoming bent, which will cause leaks to occur.
2. Remove valve body. See **REMOVAL & INSTALLATION (01V TRANSAXLE)** under VALVE BODY ASSEMBLY. Pry internal oil line off transaxle housing using a screwdriver. See **Fig. 27** . Replace "O" rings. Insert internal oil line into fitting tool. Open side of fitting tool faces toward outside of transaxle. See **Fig. 28** .
3. Using a plastic hammer, drive the oil line into the transaxle housing until the fitting tool makes contact. Ensure oil line is kept straight. Drive both oil line ends in evenly. Install valve body. Fill with ATF, check ATF level and top off as necessary. See **CHECKING FLUID LEVELS** under LUBRICATION.

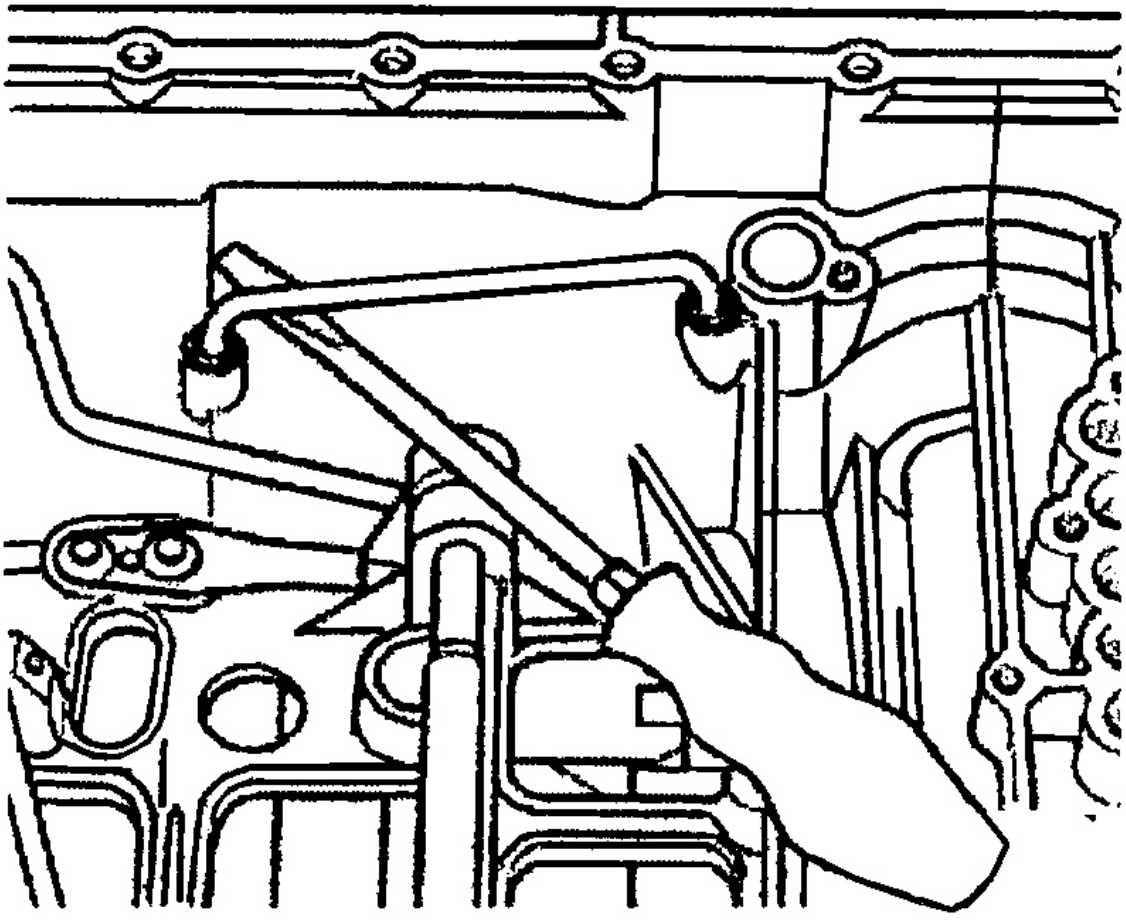


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Fig. 27: Removing Internal Oil Line (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

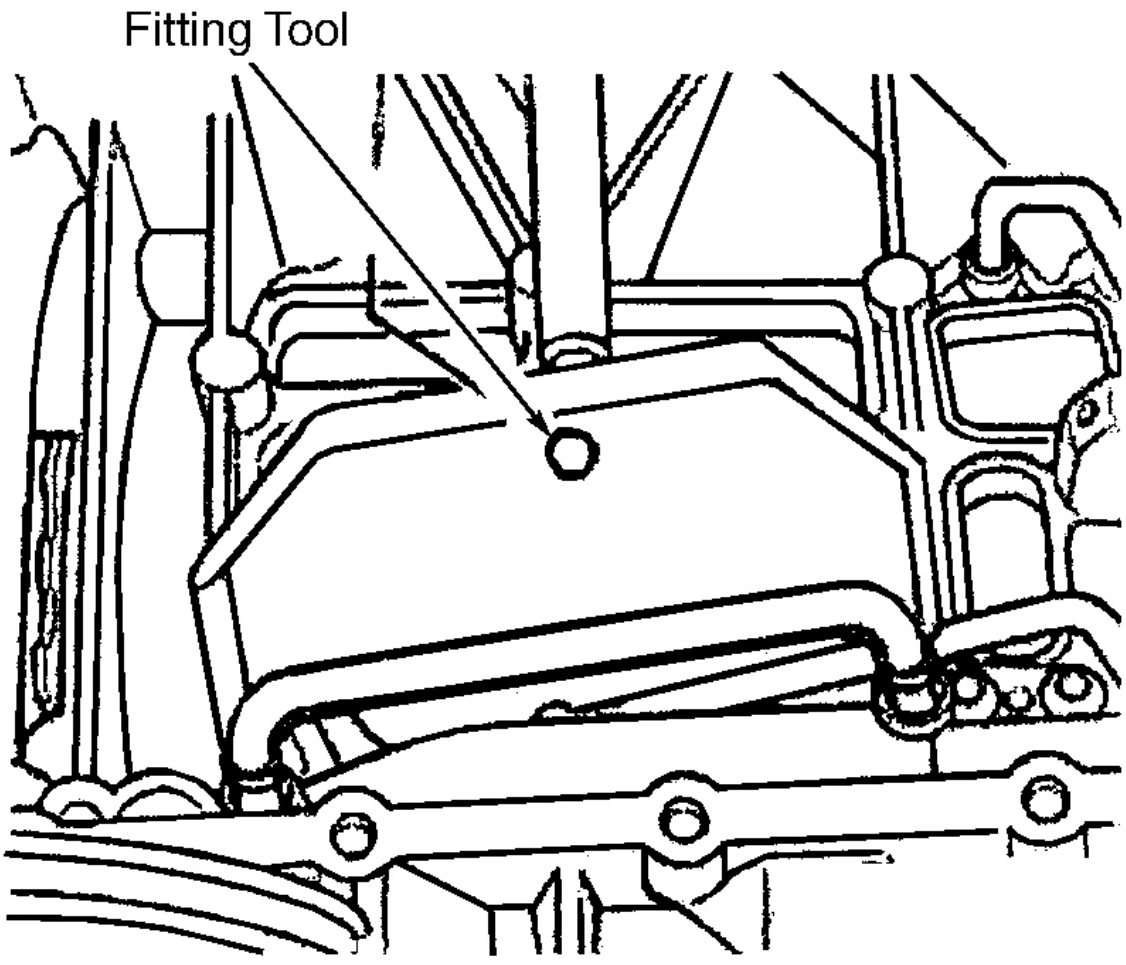

Fig. 28: Installing Internal Oil Line Using Fitting Tool (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

LOCKING CABLE

Removal & Installation (01M Transaxle - Cabrio)

WARNING: Vehicle is equipped with Supplemental Inflatable Restraint (SIR) system. When servicing vehicle, use care to avoid accidental air bag deployment. SIR system-related components are located in various locations throughout interior and exterior of vehicle, depending on application. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SIR system before servicing components. See appropriate AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

NOTE: In the following procedures, letters and numbers in parenthesis are shown in illustrations.

NOTE: Ensure locking cable is not kinked during installation.

1. Remove selector lever handle. Remove cover with cover strip. On vehicles with program switch, pull connector off program switch. On all models, remove center console. Loosen cable anchorage screw (a). See **Fig. 29** .
2. Remove locking cable out of locking lever and pull out of cable anchor. Remove steering wheel and ignition switch trim. Press locking cable clip out of ignition switch support bracket and remove locking cable from ball head. Remove locking cable.
3. When installing locking cable, ensure cable is properly routed. Install locking cable into vehicle. See **Fig. 17** . Mount locking cable eye (1) on locking lever (a). See **Fig. 30** . Install locking cable in cable anchor. Do not tighten anchorage screw (a) until after adjusting locking cable. See **Fig. 29** .
4. Mount locking cable clip on locking cable. Press locking cable onto ball head. Press locking cable with clip into ignition switch support bracket. See **Fig. 31** .
5. Route locking cable along steering column. See **Fig. 32** . Adjust locking cable on cable anchor of selector lever. Install center console. Install cover with indicator and selector lever handle. Attach trim pieces of ignition switch. Install steering wheel. After installation, adjust locking cable. See **01M TRANSAXLE (CABRIO)** under LOCKING CABLE in ADJUSTMENTS.

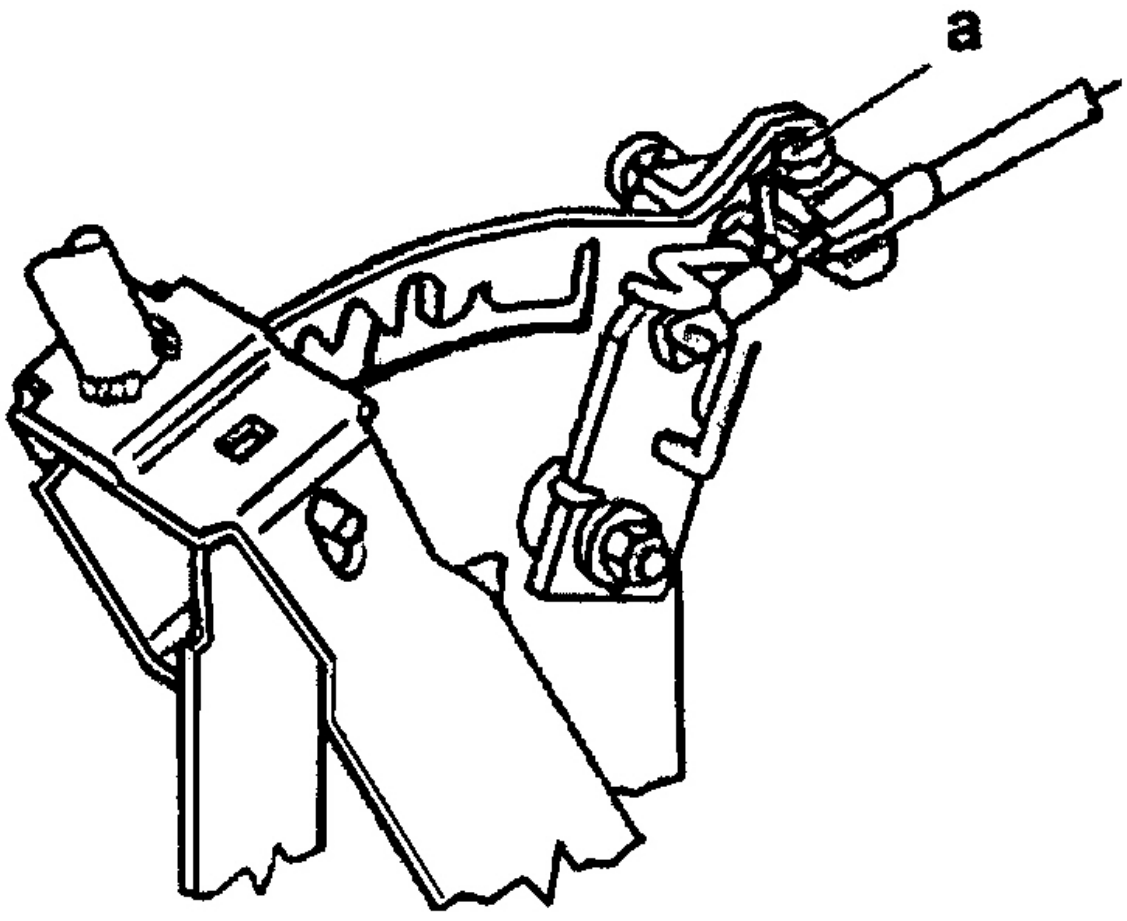

Fig. 29: Loosening Locking Cable Screw (a) (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

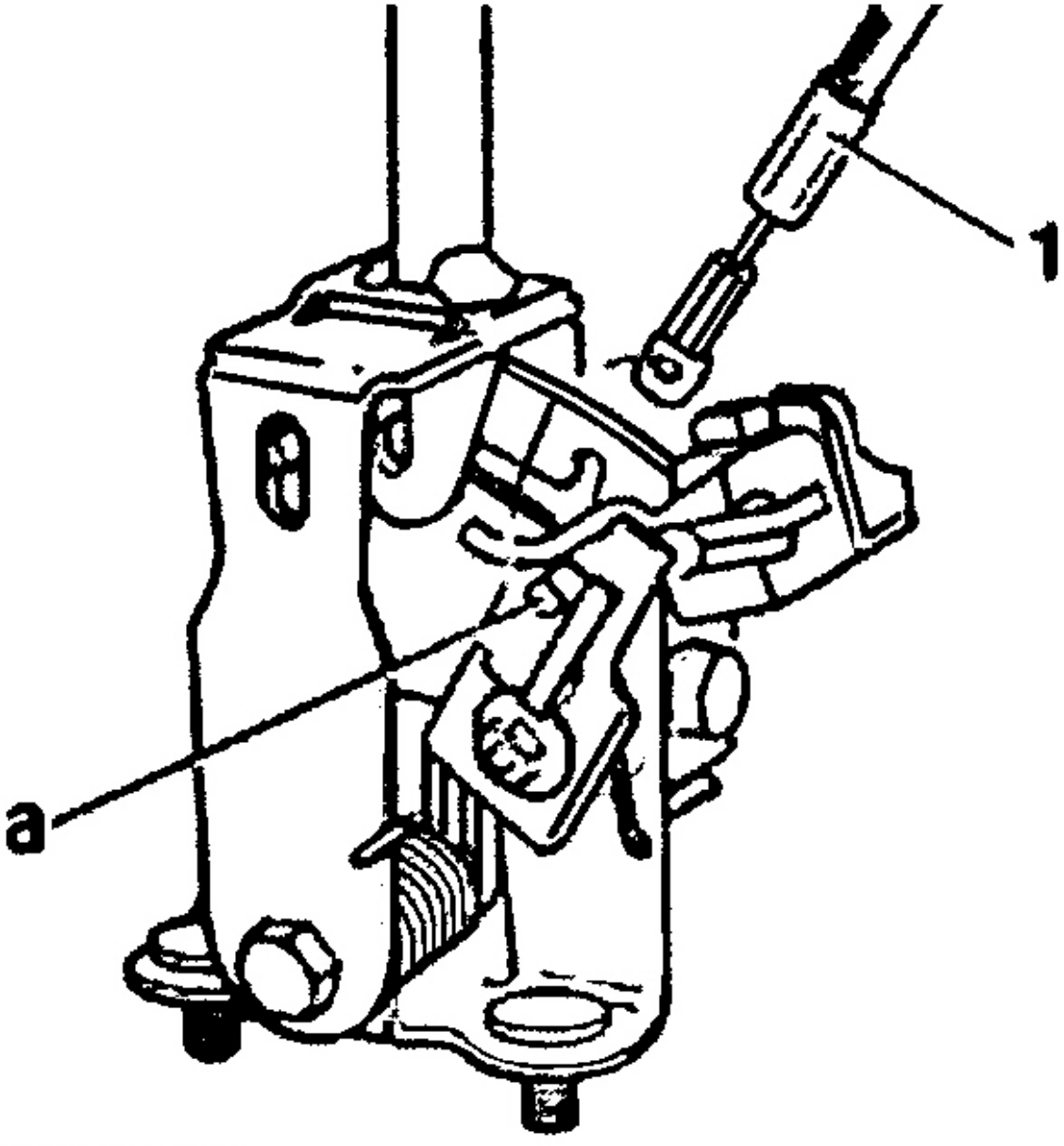

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Fig. 30: Mounting Locking Cable Eye On Locking Lever (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

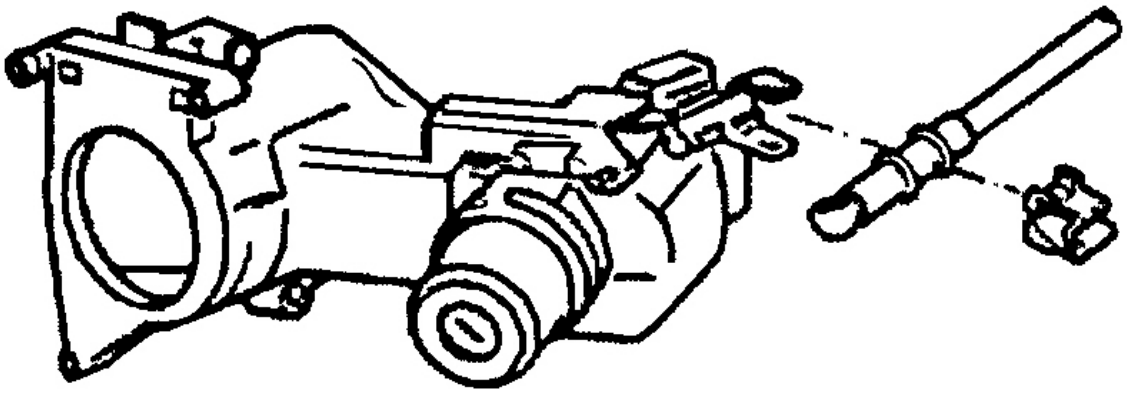

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Fig. 31: Installing Locking Cable Onto Ignition Switch Support Bracket (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

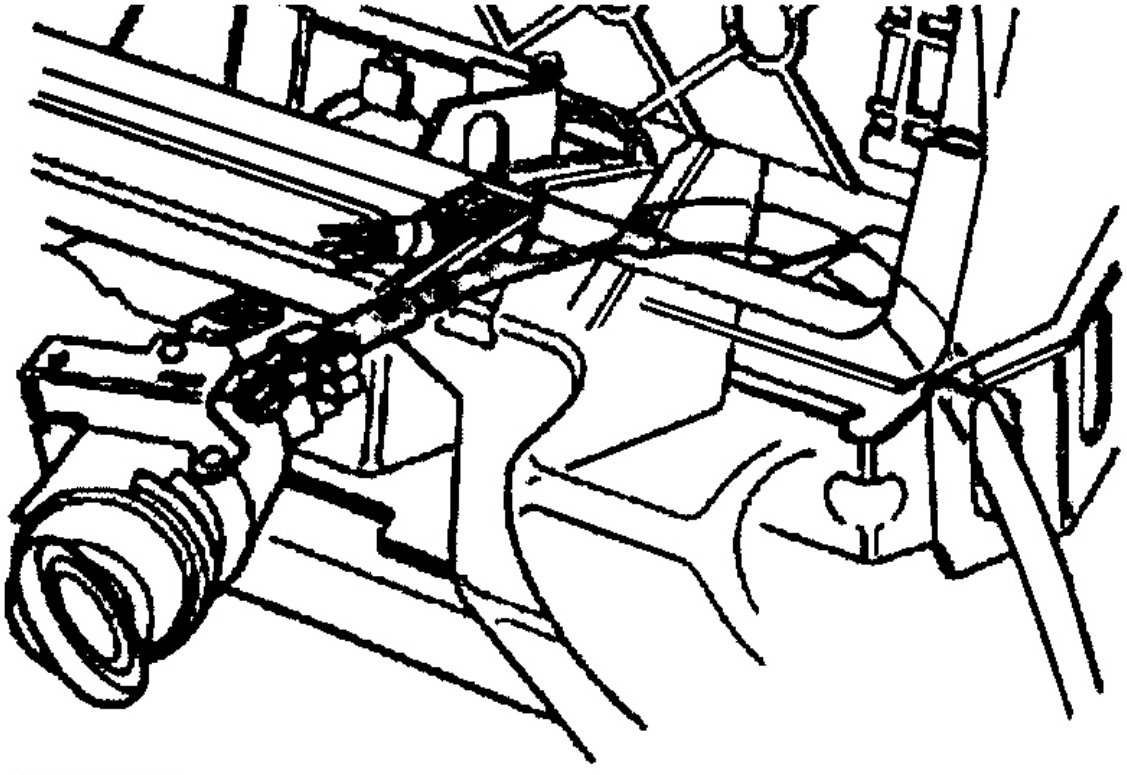

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Fig. 32: Routing Locking Cable Along Steering Column (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01M Transaxle - Golf, GTI, Jetta & New Beetle)

WARNING: Vehicle is equipped with Supplemental Inflatable Restraint (SIR) system. When servicing vehicle, use care to avoid accidental air bag deployment. SIR system-related components are located in various locations

throughout interior and exterior of vehicle, depending on application. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SIR system before servicing components. See appropriate AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

NOTE: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle.

CAUTION: Radio/cassette or radio/CD player is equipped with an anti-theft protection circuit. Whenever battery is disconnected, radio will go into anti-theft mode. When battery is reconnected, radio will display CODE, and will be inoperative until proper code number is entered. Obtain security code before disconnecting battery.

1. Note installation position of locking cable. Cable is routed around footwell vents (1), support/instrument panel (2) and heater unit (3). See **Fig. 33** . Disconnect negative battery cable. Pull locking cable clip upward off ignition switch.
2. It may be necessary to remove steering wheel, left trim under instrument panel, steering column trim and steering column adjustment handle to create enough space to remove cable. Turn ignition key to "ignition on" position. Shift selector lever into "P" position.
3. Pull out clip (2) for locking cable (3). Pull locking cable out of steering lock (1). See **Fig. 34** . Press down sleeve on selector lever handle with 2 screwdrivers. Pull selector lever handle off upward. Remove center console and extension. Remove locking cable from locking lever. Press tabs of retaining clip together (arrows). See **Fig. 19** . Pull locking cable out of selector mechanism.
4. **NOTE: When installing, ensure that the routing of the locking cable is correct. Locking cable must not be kinked. See Fig. 33 .**

   Shift selector lever into "P" position. Press locking cable into support bracket on selector lever housing until tabs on retaining clip (arrows) spring outward. See **Fig. 19** . Attach locking cable in locking lever. Turn ignition key to "ignition on" position. Push locking cable into steering lock. See **Fig. 34** .
5. Push clip into locking cable. Ensure that clip is properly located. See **Fig. 19** . After installation, adjust locking cable. See **01M TRANSAXLE (GOLF, GTI, JETTA & NEW BEETLE)** under LOCKING CABLE in ADJUSTMENTS.

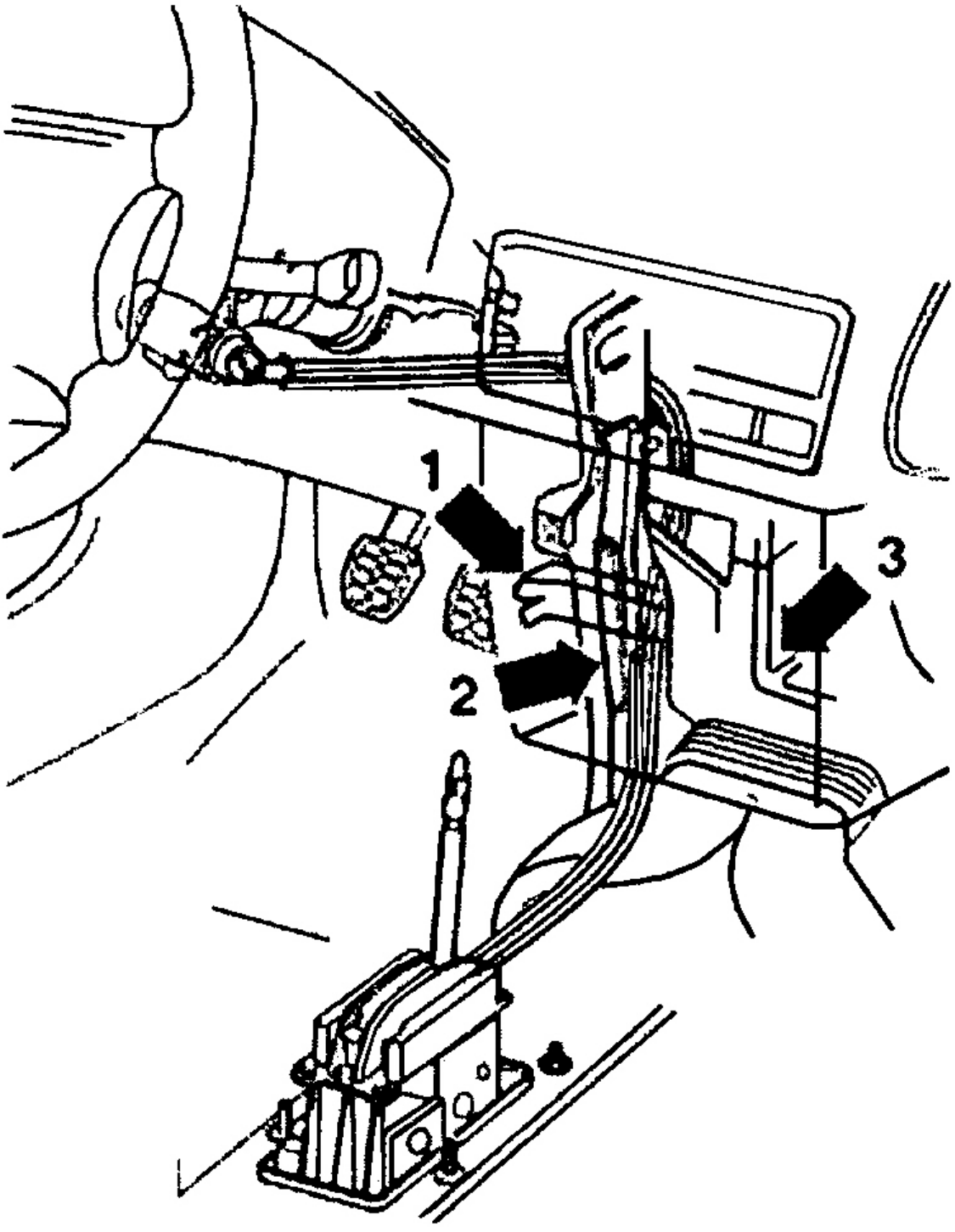

Fig. 33: Identifying Installation Position Of Locking Cable (01M Transaxle - Golf, GTI, Jetta & New Beetle)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

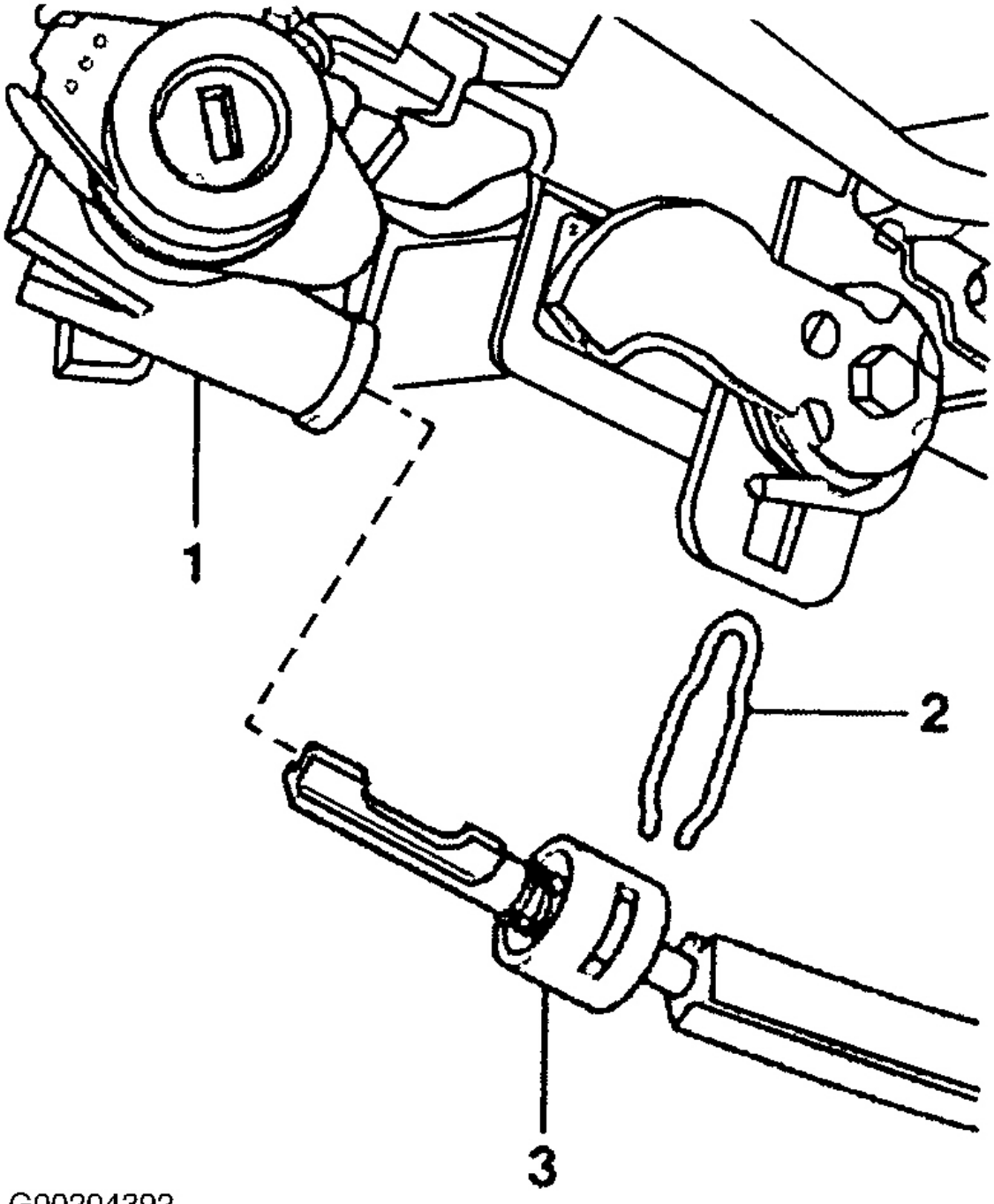

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Fig. 34: Removing Clip From Locking Cable (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01V Transaxle)

WARNING: Vehicle is equipped with Supplemental Inflatable Restraint (SIR) system. When servicing vehicle, use care to avoid accidental air bag deployment. SIR system-related components are located in various locations

throughout interior and exterior of vehicle, depending on application. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SIR system before servicing components. See appropriate AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

NOTE: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle.

CAUTION: Radio/cassette or radio/CD player is equipped with an anti-theft protection circuit. Whenever battery is disconnected, radio will go into anti-theft mode. When battery is reconnected, radio will display CODE, and will be inoperative until proper code number is entered. Obtain security code before disconnecting battery.

1. To remove cable, shift selector lever into "3" position. Turn ignition switch off. Disconnect negative battery cable. Remove selector lever handle. Remove center console and extension.
2. Remove steering wheel with air bag. Remove steering column switch. Turn ignition key to "ignition on" position. Move selector lever to "P" position. Release locking clip and pull locking cable out from ignition switch. Remove cover.
3. Unclip locking cable from securing spring on support bracket. To do this, lift securing spring slightly. Release locking cable from cable clip and take out. See **Fig. 22** .
4. To install cable, route locking cable free of kinks. Turn ignition key to "ignition on" position. Install locking cable to ignition switch. Ensure locking device engages. Secure locking cable to air bag sensor with cable clip. Turn ignition switch to LOCK position (ignition off). Move selector lever to "P" position. Hook locking cable into locking lever and clip locking cable support bracket into securing spring of bracket. See **Fig. 22** .

SELECTOR LEVER CABLE

Removal & Installation (01M Transaxle - Golf, GTI, Jetta & New Beetle)

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

1. On New Beetle, remove air cleaner. On all models, shift selector lever into "P" position. Pull selector lever cable (1) upward off lever/selector shaft (4). Remove circlip (3) at support bracket. See **Fig. 24** . Raise and support vehicle. Separate exhaust system by loosening clamping sleeve. Remove front and rear tunnel heat shield. Remove cover from selector lever housing.
2. Pry selector lever cable (3) off selector lever (2) with a screwdriver. See **Fig. 35** . Pull circlip (1) for securing selector lever cable to selector lever housing out downward. Pull selector cable carefully out of selector lever housing.
3.

NOTE: Check the protective sleeve for damage. Protective sleeve can only be changed together with the selector lever cable. Before installing, lightly grease ball socket on end of cable. Check that the protective sleeve is correctly fitted. Do not install the protective sleeve twisted. Do not bend or kink the selector lever cable.

Ensure selector lever and lever/selector shaft are in "P" position, and front wheels are blocked. Guide selector lever cable (3) with a new seal into selector lever housing. See **Fig. 35** . Press selector lever cable onto selector lever (2). Install new selector lever cable circlip (1) onto selector lever housing.

4. During installation, the angled end of the circlip must face to the inside of the selector lever housing. Move selector lever from "P" to "1" position. Selector lever mechanism and selector lever cable must move freely. Replace selector lever cable or service selector lever mechanism as necessary. Shift selector lever into "P" position.
5. Loosen bolt (2) at front ball socket (1) of selector lever cable. Place selector lever cable in support bracket/transaxle and push onto lever/selector shaft. Install new circlip (3) to selector lever cable at support bracket/transaxle. See **Fig. 24** .
6. Tighten bolt to specification. See **TORQUE SPECIFICATIONS** . Fit cover to selector lever housing with new sealing rings. Install front and rear tunnel heat shields. Join exhaust system and secure with clamping sleeve. Check selector mechanism operation.

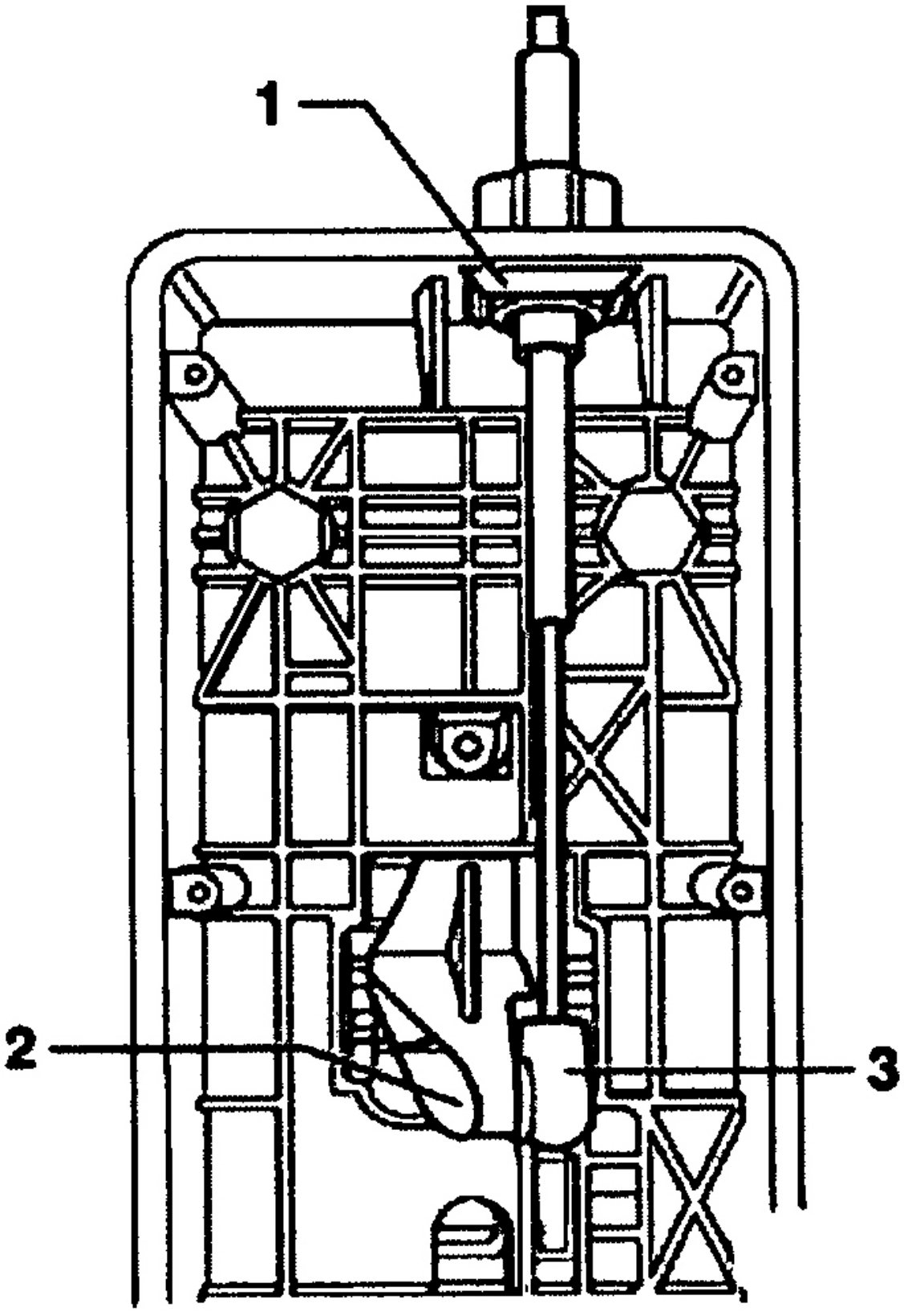

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Fig. 35: Removing & Installing Selector Lever Cable (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01V Transaxle)

NOTE: In the following procedures, letters and numbers in parenthesis are shown in illustrations.

1. To remove cable, shift selector lever into "P" position. Raise and support vehicle. Remove noise insulation tray. See **Fig. 25** . On vehicles with V6 engine, remove front exhaust system with catalytic converter. Remove selector lever cable protective plate. On all vehicles, remove left hand transaxle bracket. Remove cover from mounting bracket (arrows). See **Fig. 36** .
2. Disconnect selector lever cable from mounting bracket as follows: Press together ends of securing clip (B) and remove. Pull down locking plate (A) and remove. See **Fig. 37** . Locking plate is used to secure selector lever cable to mounting bracket. Pull selector lever cable off selector lever.
3. Remove selector lever cable from selector shaft lever (arrow). See **Fig. 40** . Remove support bracket from transaxle. Release selector lever cable from support bracket. Pull selector lever cable out from mounting bracket. Do not kink cable when removing from support bracket.

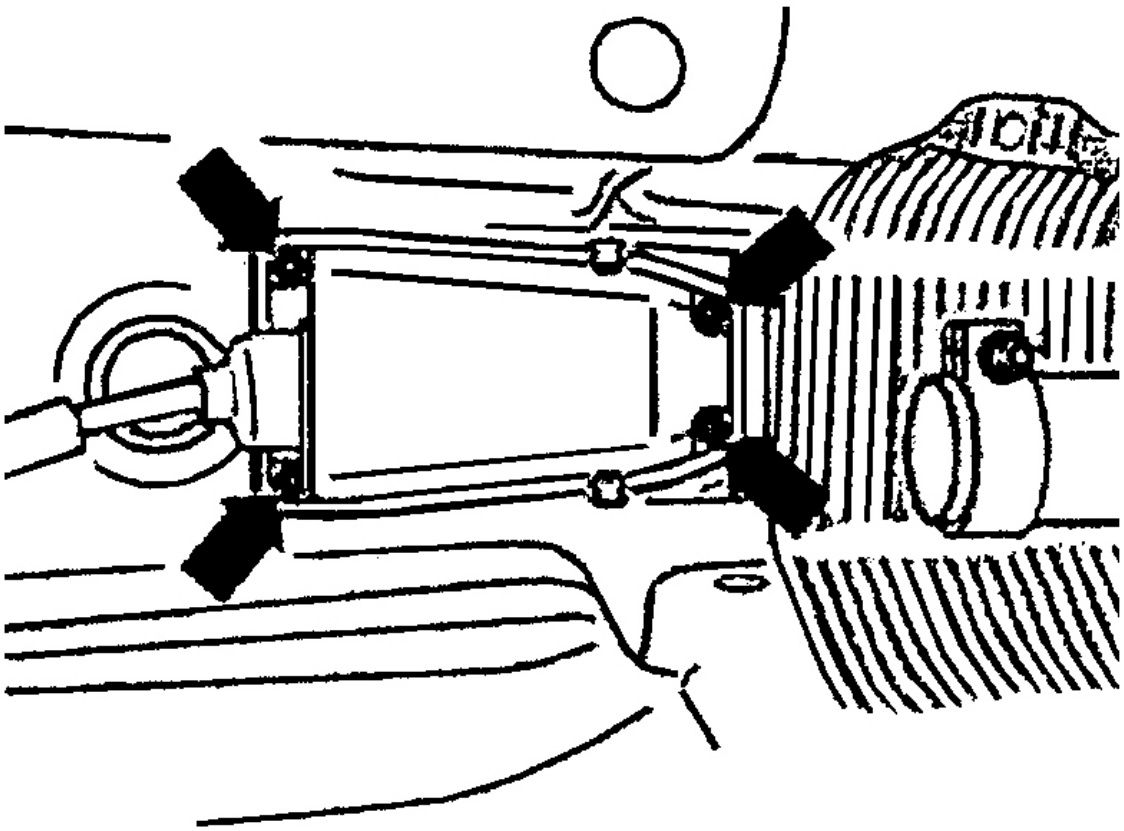

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Fig. 36: Removing Cover From Mounting Bracket (01V Transaxle)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

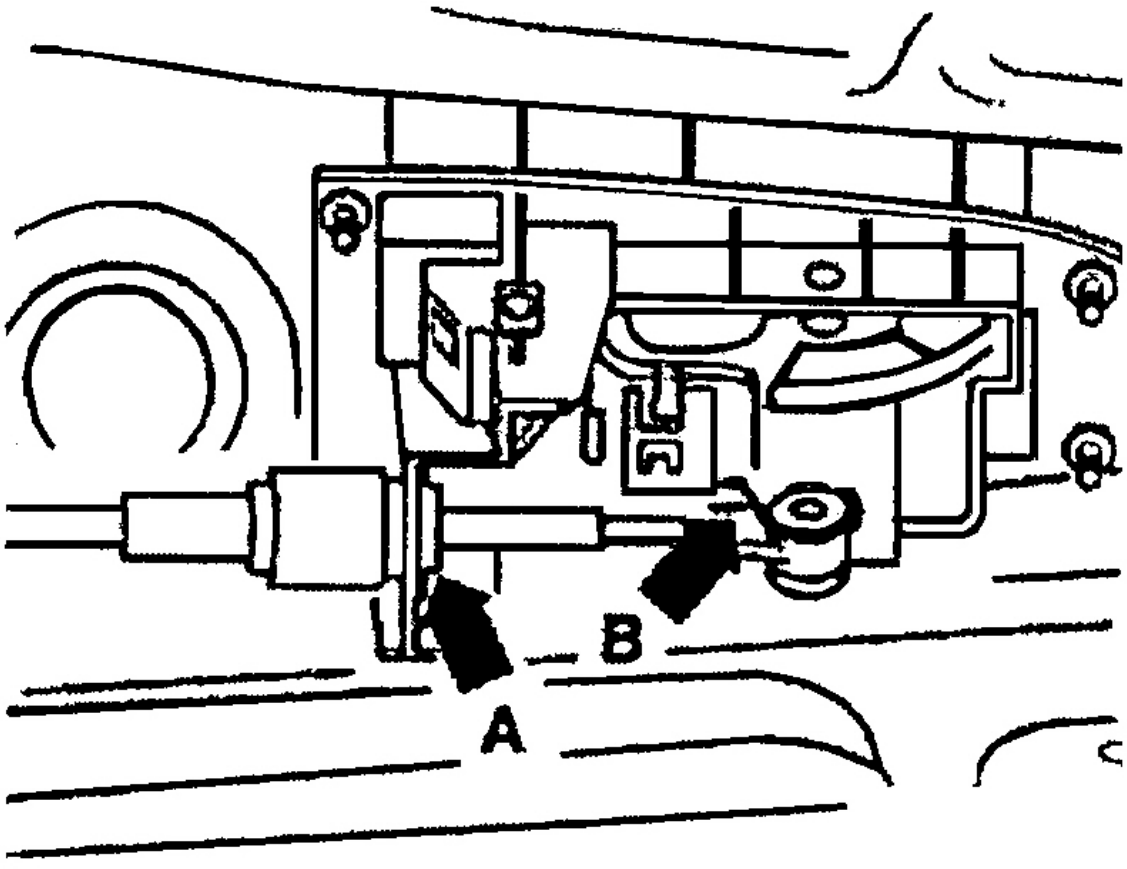

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Fig. 37: Removing Clip & Locking Plate (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

4. To install cable, push selector lever cable (1) fully forward (arrow) and shift selector shaft lever (2) into "2" position. See **Fig. 38** . Using a pair of pliers, carefully push the selector lever cable onto the selector shaft lever. Take care not to bend the selector shaft lever, otherwise the selector mechanism will not be able to be adjusted correctly.
5. Bring selector shaft lever to "P" position on transaxle. Locking lever must engage in park lock wheel, and both front wheels are blocked (cannot be turned together in a direction). Do not bend or kink the selector lever cable. Lightly grease cable eye and cable ends before installing. Insert selector lever cable in mounting bracket. Connect selector lever cable to selector lever.
6. To position cable for installation, the angled end of the locking plate must point toward the end of the selector lever cable. Install locking plate (A) for selector lever cable onto mounting bracket. Press together ends of securing clip (B) and slide onto end of selector lever cable. See **Fig. 37** . Connect selector lever cable to support bracket hand tight. Bolt support bracket to transaxle hand tight. Align selector cable lever in support bracket.
7. Tighten bolts securing support bracket to transaxle (1) to 17 ft. lbs. (23 N.m). Secure selector lever cable to support bracket (2). Tighten bolts to 106 INCH lbs. (12 N.m). When doing this, counterhold on the hex

(3). See **Fig. 39**

8. Tighten mounting bracket cover nuts to 89 INCH lbs. (10 N.m). Check selector lever cable adjustment, and adjust if necessary. See **01V TRANSAXLE** under SELECTOR LEVER CABLE in ADJUSTMENTS. Install left hand transaxle bracket. On vehicles with V6 engine, install selector lever cable protective plate. Tighten bolts to 17 ft. lbs. (23 N.m). Install front exhaust system with catalytic converter. On all vehicles, install noise insulation.

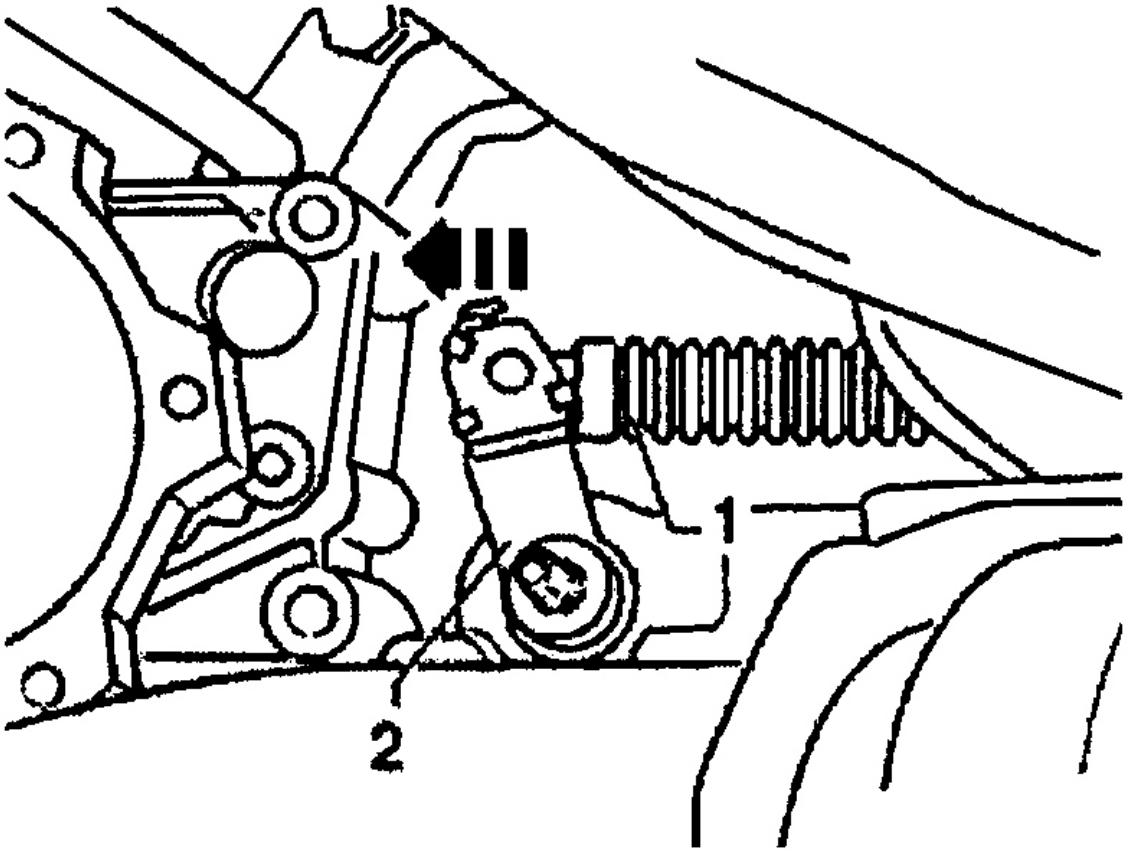

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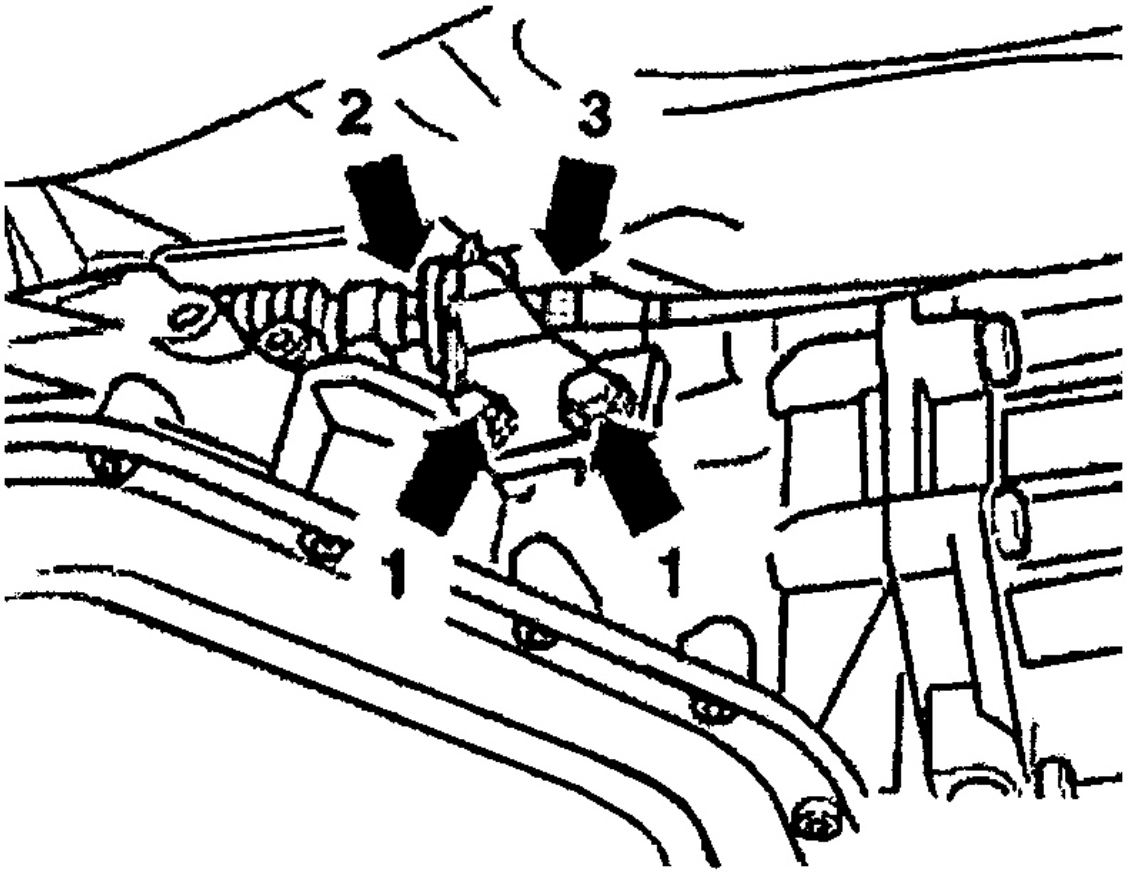
Fig. 38: Positioning Selector Lever Cable & Shaft Level (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00219322

Fig. 39: Identifying Support Bracket Bolt Locations (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

SELECTOR SHAFT OIL SEAL

Removal & Installation (01V Transaxle)

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

1. Remove multifunction TR switch. See **REMOVAL & INSTALLATION (01V TRANSAXLE)** under TRANSAXLE RANGE SWITCH. On vehicles equipped with V6 and W8 engine, remove fornt left exhaust system. On all vehicles, use appropriate pry bar to remove selector lever cable from selector shaft lever. See **Fig. 40** . Drive spring pin (1) out of transaxle selector lever (2) until transaxle selector lever can be removed from selector shaft. See **Fig. 41** . Using a screwdriver, pry out oil seal.
2. To install, apply ATF to circumference and sealing lips of oil seal. Open side of seal faces transaxle. Using appropriate driver, drive in NEW oil seal until thrust piece contacts stop. See **Fig. 42** . Ensure oil seal remains straight during installation. Push transaxle selector lever onto selector shaft and install spring pin. Carefully press selector lever cable onto selector shaft using a pair of pliers. Take care not to bend selector shaft lever, otherwise selector mechanism will not be able to be adjusted correctly. Install multifunction TR switch. On vehicles with V6 and W8 engine, install front left exhaust system.

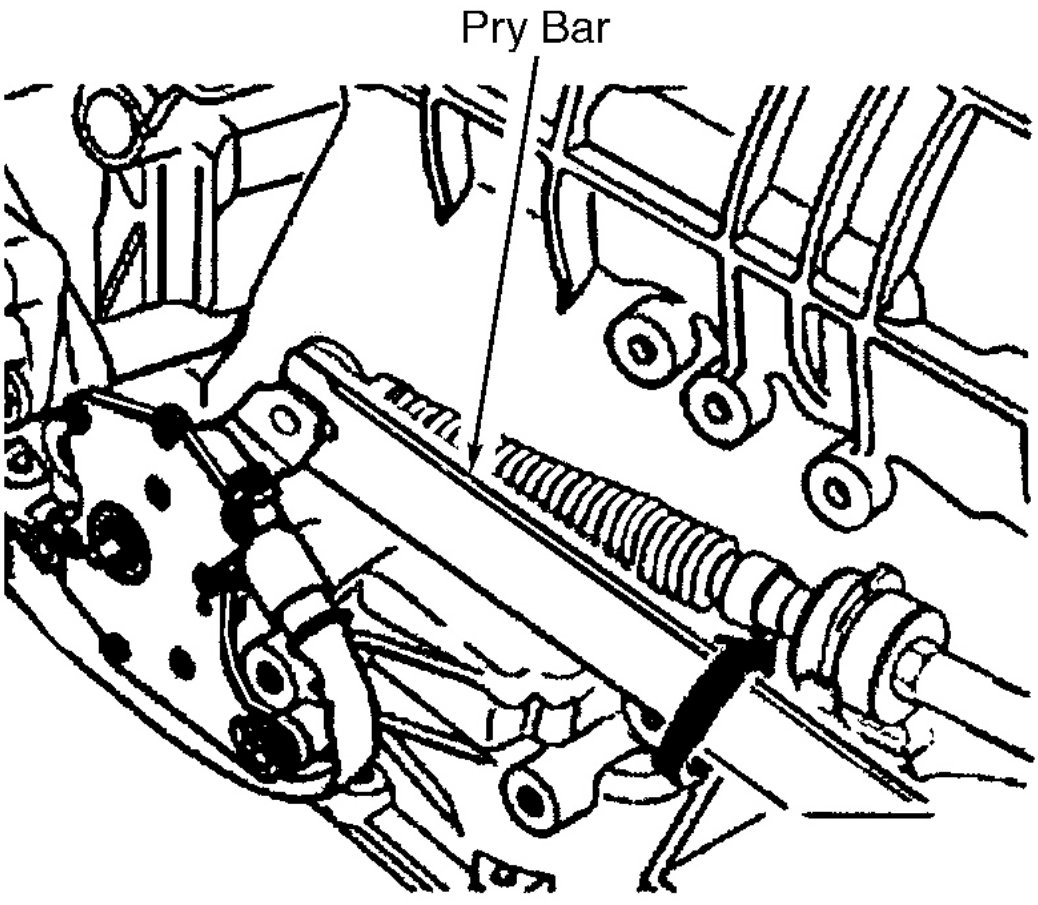
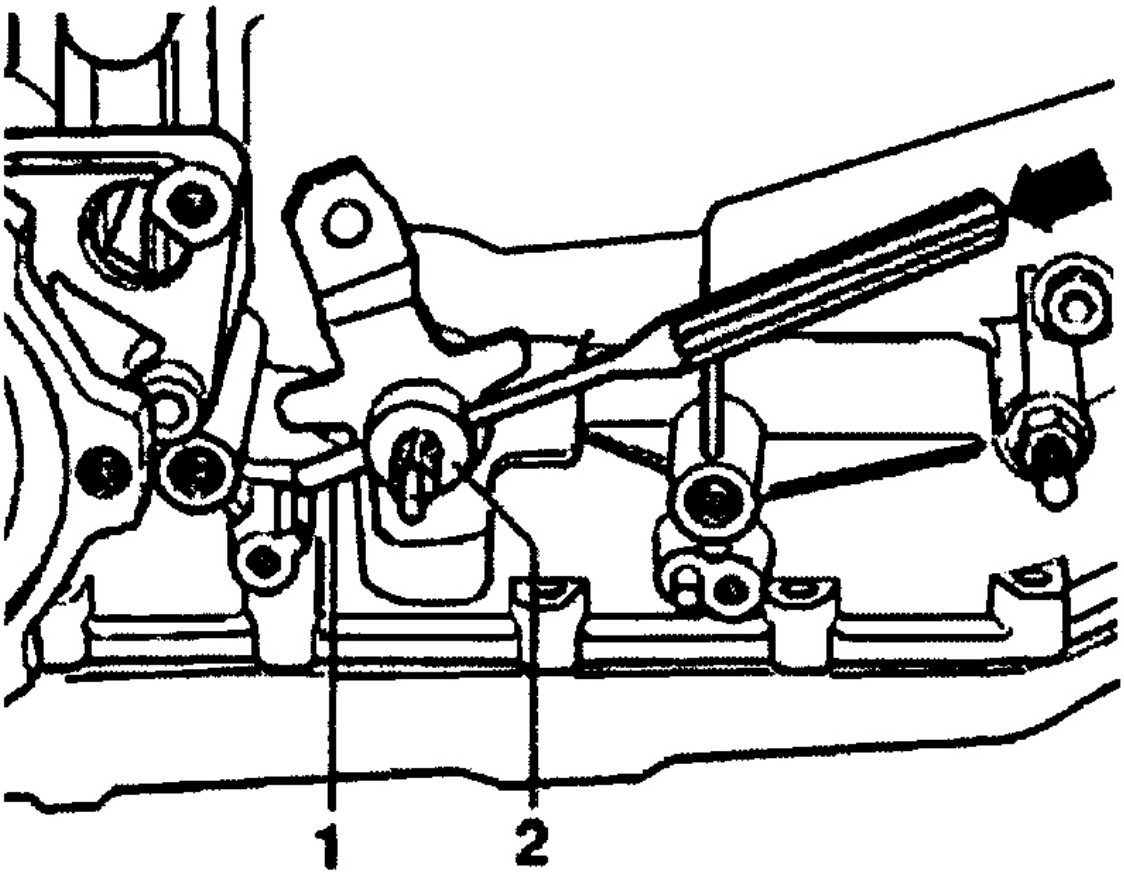
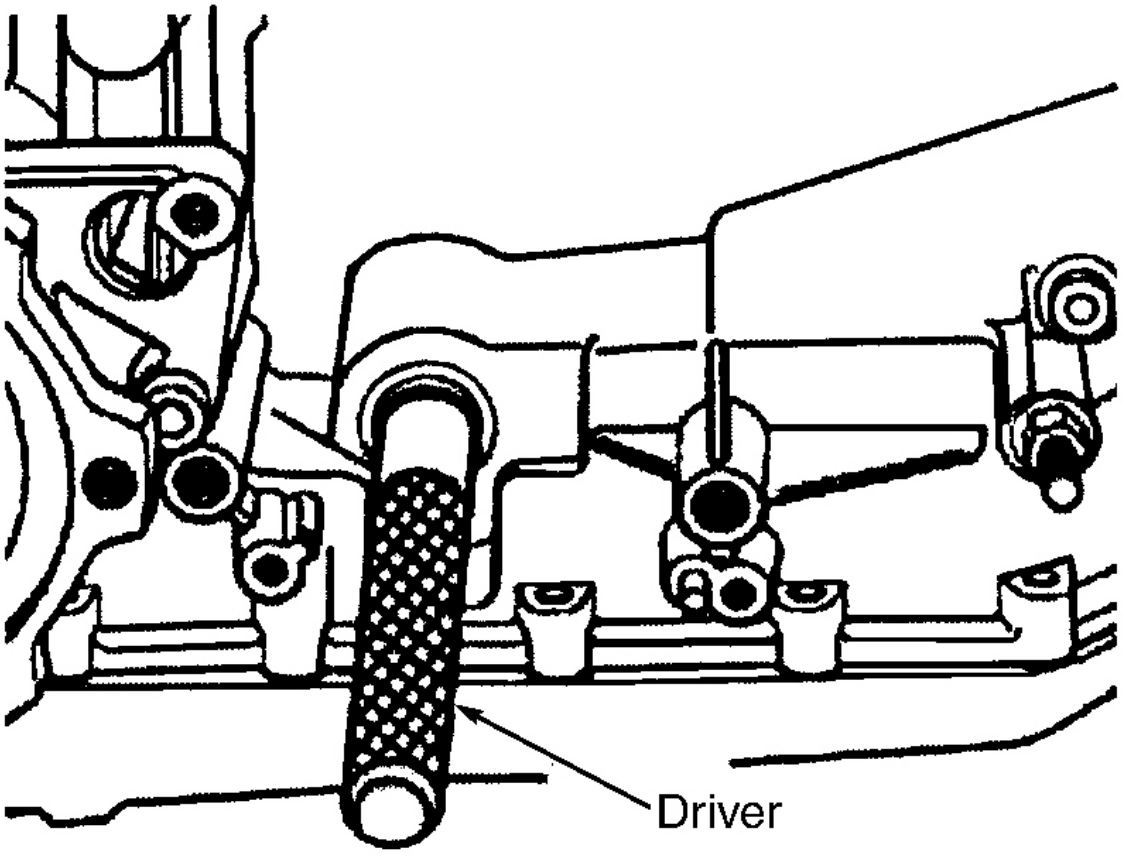


Fig. 40: Prying Off Selector Lever Cable (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00204406

Fig. 41: Driving Out Spring Pin (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00204407

Fig. 42: Installing Selector Shaft Oil Seal (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TRANSAXLE FLUID TEMPERATURE SENSOR

Removal & Installation (01V Transaxle)

Transaxle fluid temperature sensor is integrated in the transaxle wiring harness. For temperature sensor replacement, see **TRANSAXLE WIRING HARNESS** .

TRANSAXLE OIL PAN & ATF SCREEN

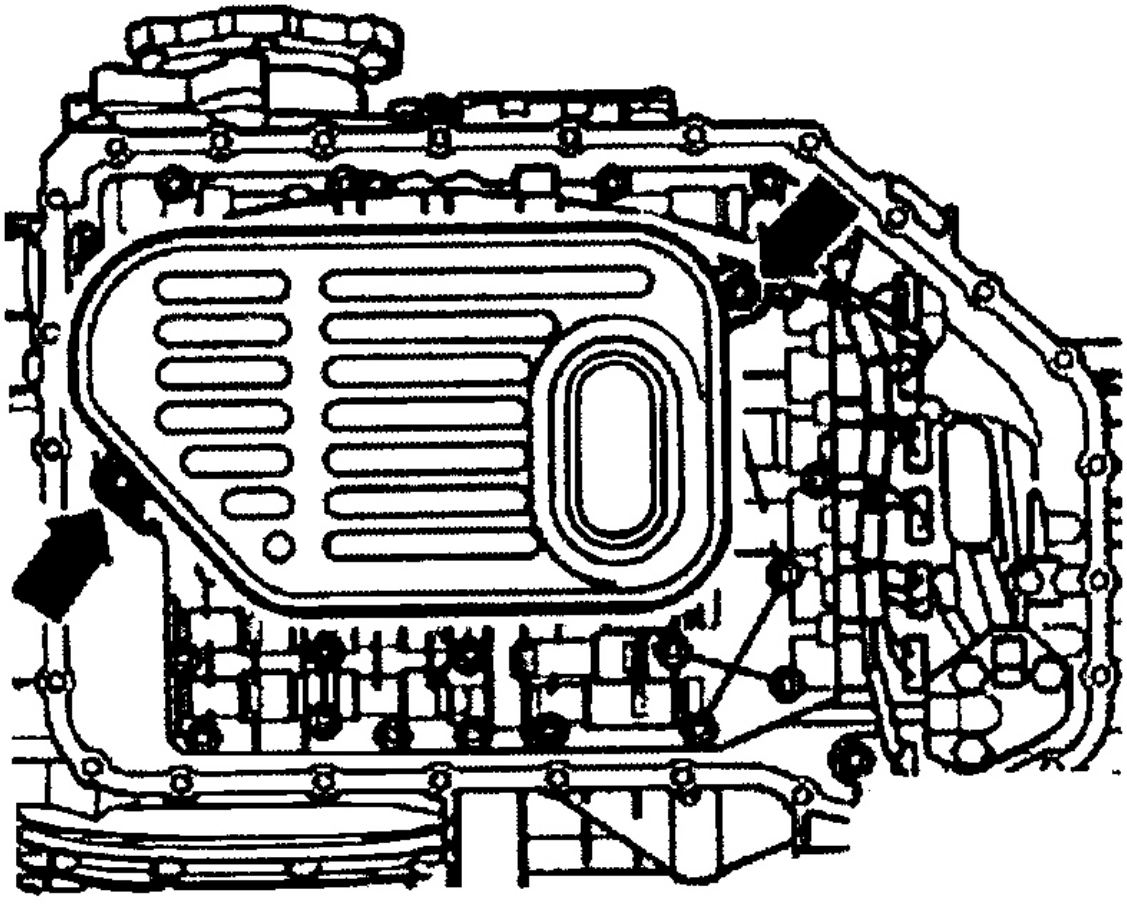
Removal & Installation (01V Transaxle)

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

1. On vehicles equipped with auxiliary heater, remove exhaust pipe bolts at noise insulation. On all vehicles, remove noise insulation tray. See **Fig. 25** . Place drain pan under transaxle. Remove drain plug (1). See **Fig. 14** . Unscrew oil pan bolts in diagonals sequence and remove oil pan. Clean all 4 magnets in recesses of oil pan. Ensure magnets are seated correctly in pan upon installation.
2. Unscrew 2 bolts on ATF screen. See **Fig. 43** . Pull ATF screen off of valve body. To install ATF screen,

lubricate seal on intake neck of ATF screen with ATF. Carefully push intake neck of ATF screen into opening of valve body. Install bolts and tighten to 53 INCH lbs. (6 N.m).

3. Install NEW oil pan gasket and oil pan. Install oil pan bolts and tighten in diagonal sequence to 89 INCH lbs. (10 N.m). Install drain plug and tighten to 30 ft. lbs. (40 N.m). On vehicles equipped with auxiliary heater, bolt exhaust pipe firmly to noise insulation. On all vehicles, fill transaxle with ATF. See **01V TRANSAXLE** under DRAINING & REFILLING in LUBRICATION.



G00204404

Fig. 43: Removing ATF Screen (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

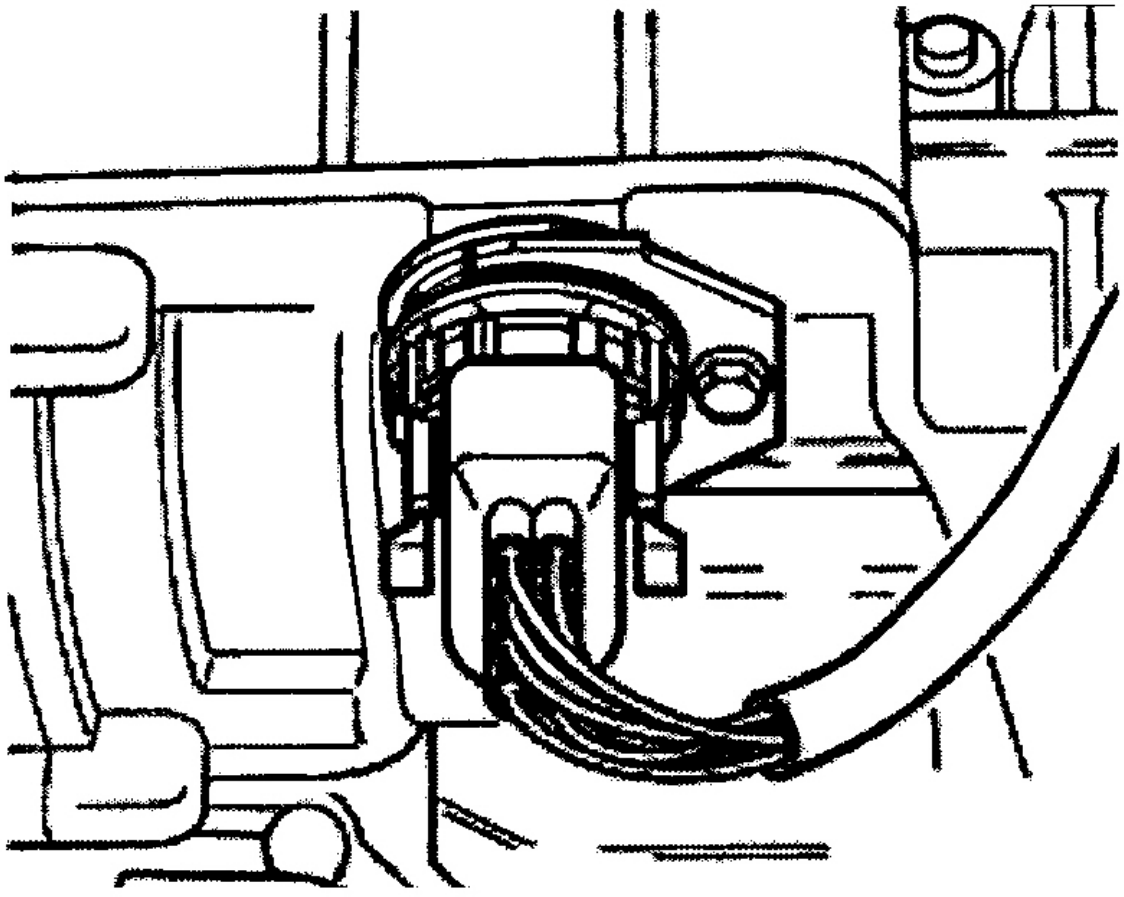
TRANSAXLE RANGE SWITCH

Removal & Installation (01M Transaxle - Golf, GTI, Jetta & New Beetle)

NOTE: Transaxle range switch may also be referred to as multifunction TR switch.

Multifunction TR switch is located on rear of transaxle. Turn ignition switch off and open hood. Disconnect wiring connector from multifunction TR switch. See **Fig. 44** . Remove bolt and retainer. Remove multifunction TR switch. To install, reverse removal procedure. Replace seal on switch. Insert switch so that each pin rests on

a slope of detent segment. Tighten bolt to 89 INCH lbs. (10 N.m).



G00204393

Fig. 44: Removing & Installing Multifunction TR Switch (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01V Transaxle)

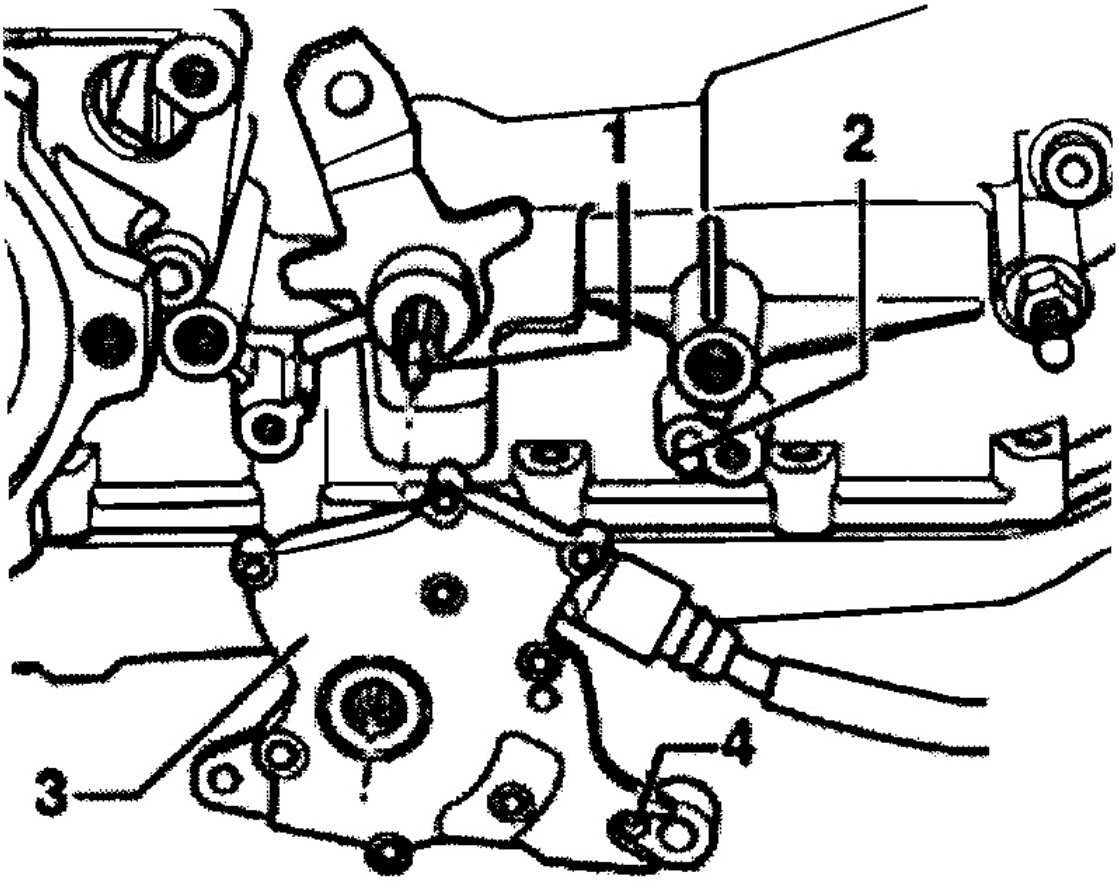
NOTE: Transaxle range switch may also be referred to as multifunction TR switch.

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

1. Raise and support vehicle. Remove left wheel. On vehicles equipped with TDI engine, remove left drive axle noise insulation from wheel housing. See **Fig. 10** . On vehicles with auxiliary heater, remove exhaust pipe bolts at noise insulation. On all vehicles, remove left hand transaxle bracket. Unscrew bolts and detach multifunction TR switch from transaxle. Pull switch off selector shaft. See **Fig. 45** .
2. To install, center multifunction TR switch on selector shaft. Flat section in splines in switch (3) must coincide with flat section of selector shaft (1). Do not tilt or use force when installing switch. Switch contacts may be damaged. Turn switch so that drilling (4) on switch housing can be installed on locating

pin (2) on transaxle housing. See **Fig. 45** . Install bolts and tighten to 71 INCH lbs. (8 N.m).

3. Install left hand transaxle bracket. On vehicles equipped with TDI engine, install left drive axle noise insulation to wheel housing. On all vehicles, install left wheel. Install noise insulation. On vehicles equipped with auxiliary heater, bolt exhaust pipe firmly to noise insulation.



G00204408

Fig. 45: Removing & Installing Multifunction TR Switch (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TRANSAXLE RPM SENSOR

NOTE: Transaxles with hydraulic control system type E17, on which the sensor for the transaxle input signal (inductive sender) is attached to the underside of the valve body. Transaxles with hydraulic control system type E18, on which the sensor for the transaxle input speed (Hall sender) is attached to the transaxle housing behind the valve body.

Removal & Installation (01V Transaxle With E17 Valve Body)

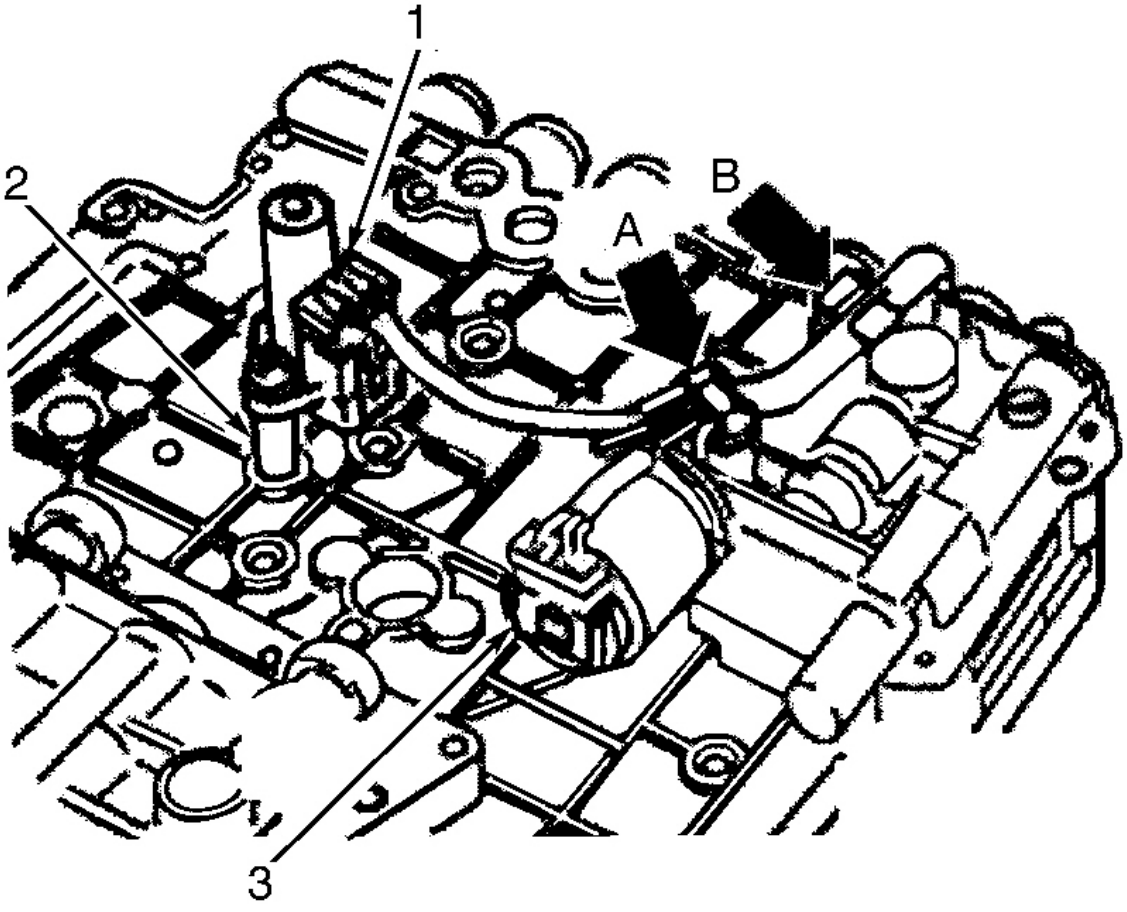
NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

Remove valve body. See **REMOVAL & INSTALLATION (01V TRANSAXLE)** under VALVE BODY ASSEMBLY. Turn valve body over and unplug connector from transaxle RPM sensor (1). See **Fig. 46** . Remove bolts and remove sensor from valve body. Install sensor with spacer (2) and tighten bolts to 53 INCH lbs. (6 N.m). Ensure sensor is installed correctly. Side of sensor with plug contacts faces toward center of valve body. Install connector to sensor. Install valve body. Fill with ATF and check ATF level. See **CHECKING FLUID LEVELS** under LUBRICATION.

Removal & Installation (01V Transaxle With E18 Valve Body)

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

Remove valve body. See **REMOVAL & INSTALLATION (01V TRANSAXLE)** under VALVE BODY ASSEMBLY. Remove bolt (B) and remove transaxle RPM sensor (A). See **Fig. 69** . To install reverse removal procedure. Tighten bolt to 80 INCH lbs. (9 N.m). To ensure wiring harness does not become trapped when installing the valve body, route the wire with connector (C) according to the illustration. See **Fig. 69** . Fill with ATF and check ATF level. See **CHECKING FLUID LEVELS** under LUBRICATION.



G00219326

Fig. 46: Removing & Installing Transaxle RPM Sensor (01V Transaxle - With E17 Valve Body)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TRANSAXLE VEHICLE SPEED SENSOR

Removal & Installation (01M Transaxle - Golf, GTI, Jetta & New Beetle)

Transaxle vehicle speed sensor (arrow) is located on top of the transaxle. Turn ignition switch off and open hood. Disconnect wiring connector from sensor. Remove bolt and pull sensor out. See **Fig. 47** . To install, reverse removal procedure. Replace seal on sensor. Tighten bolt to 89 INCH lbs. (10 N.m).

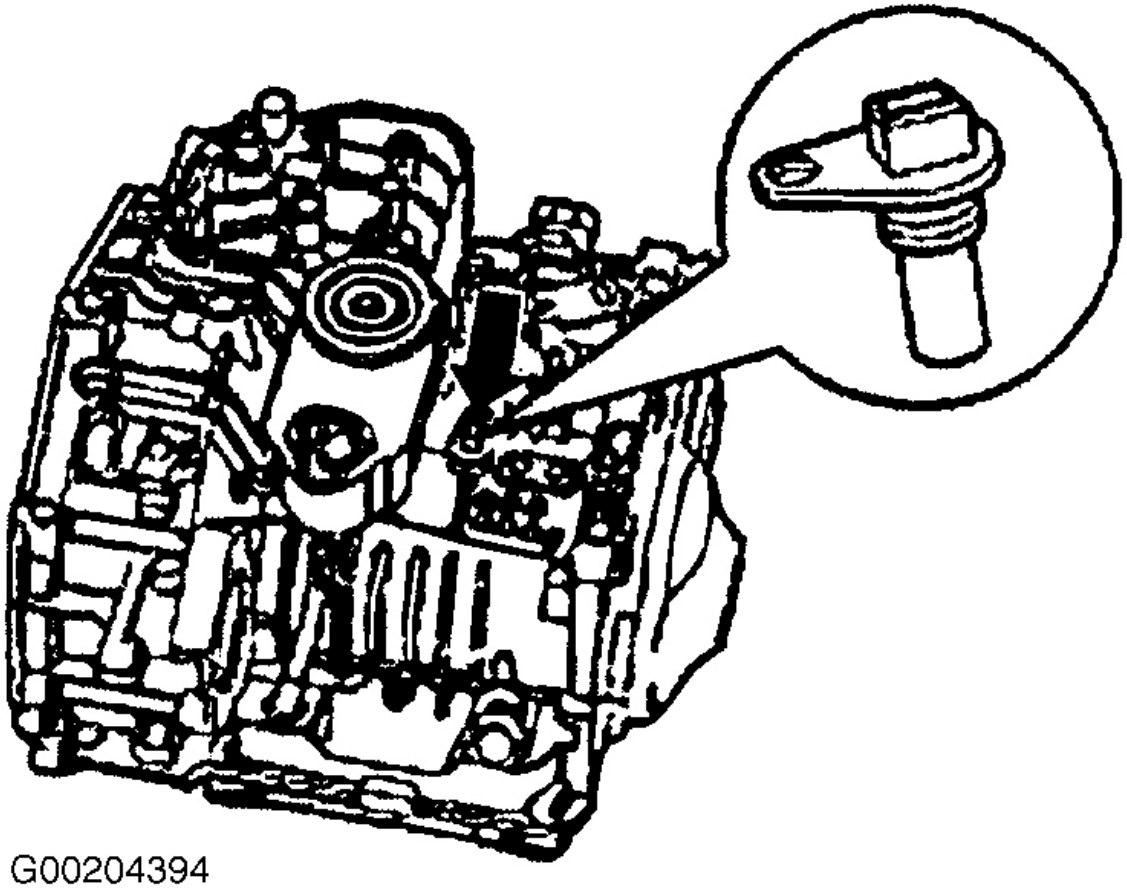
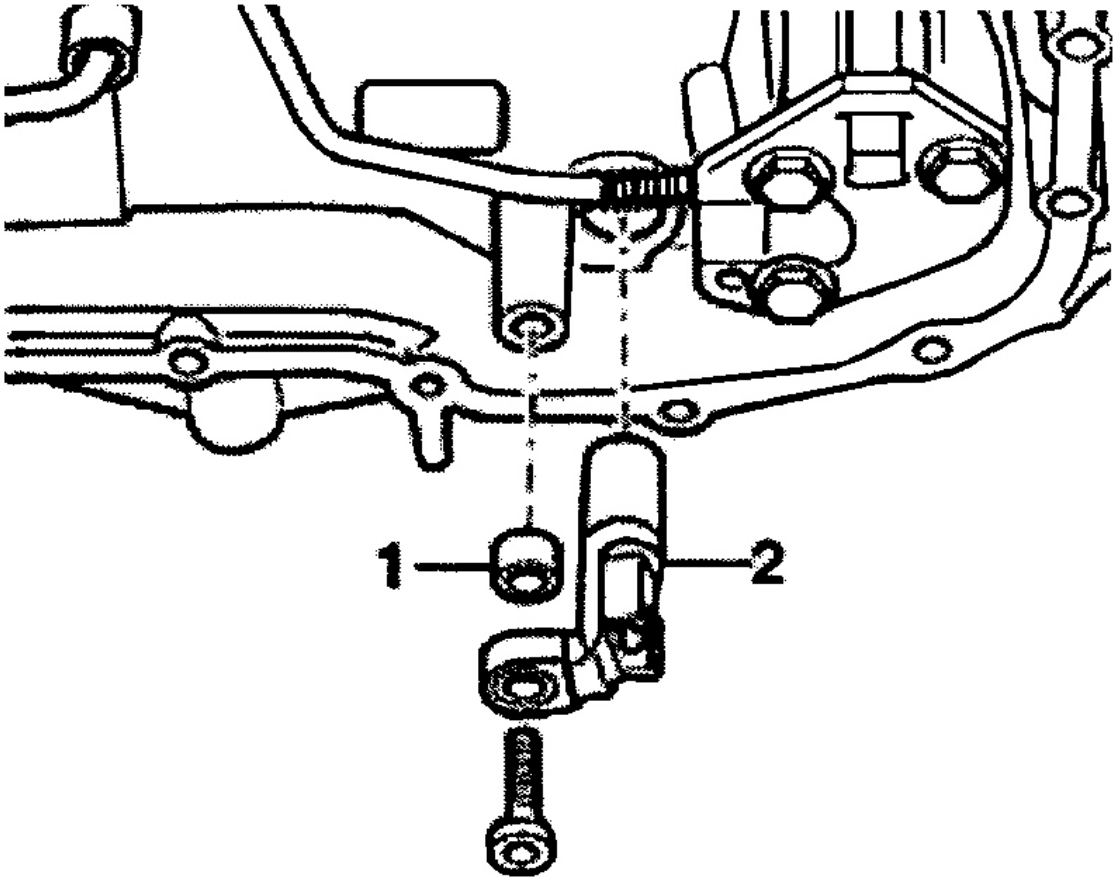


Fig. 47: Removing & Installing Transaxle Vehicle Speed Sensor (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01V Transaxle)

NOTE: In the following procedure, numbers in parenthesis are shown in illustration.

Remove oil pan. Pull connector off transaxle vehicle speed sensor. See **Fig. 66** . Remove bolt and transaxle vehicle speed sensor (2). See **Fig. 48** . To install, position speed sensor with spacer (1) and tighten bolt to 53 INCH lbs. (6 N.m). Connect speed sensor connector. Install oil pan. Fill with ATF and check ATF level. See **CHECKING FLUID LEVELS** under LUBRICATION.



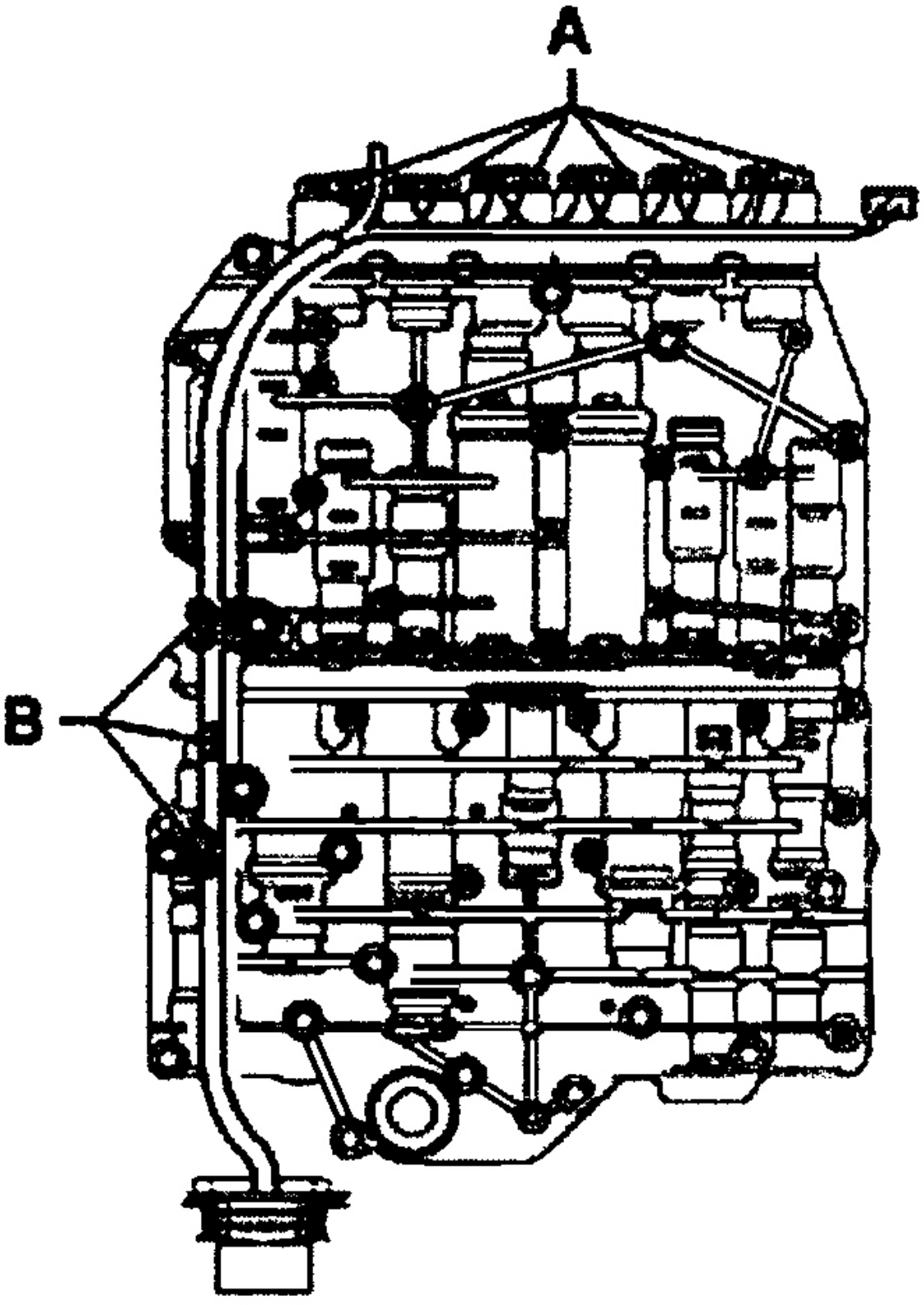
G00219325

Fig. 48: Removing & Installing Transaxle Vehicle Speed Sensor (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TRANSAXLE WIRING HARNESS

Removal & Installation (01V Transaxle)

1. Remove valve body. See **REMOVAL & INSTALLATION (01V TRANSAXLE)** under VALVE BODY ASSEMBLY. Using a small screwdriver, pry out retaining tabs on solenoid valve connectors, and pull off connectors (A) one at a time. See **Fig. 49** . Disengage wiring harness from retainers (B) on side of valve body. Turn valve body over, and unplug connector from transaxle RPM sensor (1). Remove first retaining clip (A) and unclip harness from second retaining clip (B). Pull connector (3) off solenoid valve (pressure control solenoid on E18 valve body). See **Fig. 46** .
2. To install, reverse removal procedure. When installing wiring harness, plug the connectors onto the respective solenoid valves. Clip the wiring harness into the retaining clips. If not installed correctly, wiring harness can be trapped when the valve body is installed. Install valve body. Fill with ATF and check ATF level. See **CHECKING FLUID LEVELS** under LUBRICATION.



G00219327

Fig. 49: Removing & Installing Wiring Harness (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

VEHICLE SPEED SENSOR

Removal & Installation (01M Transaxle - Golf, GTI, Jetta & New Beetle)

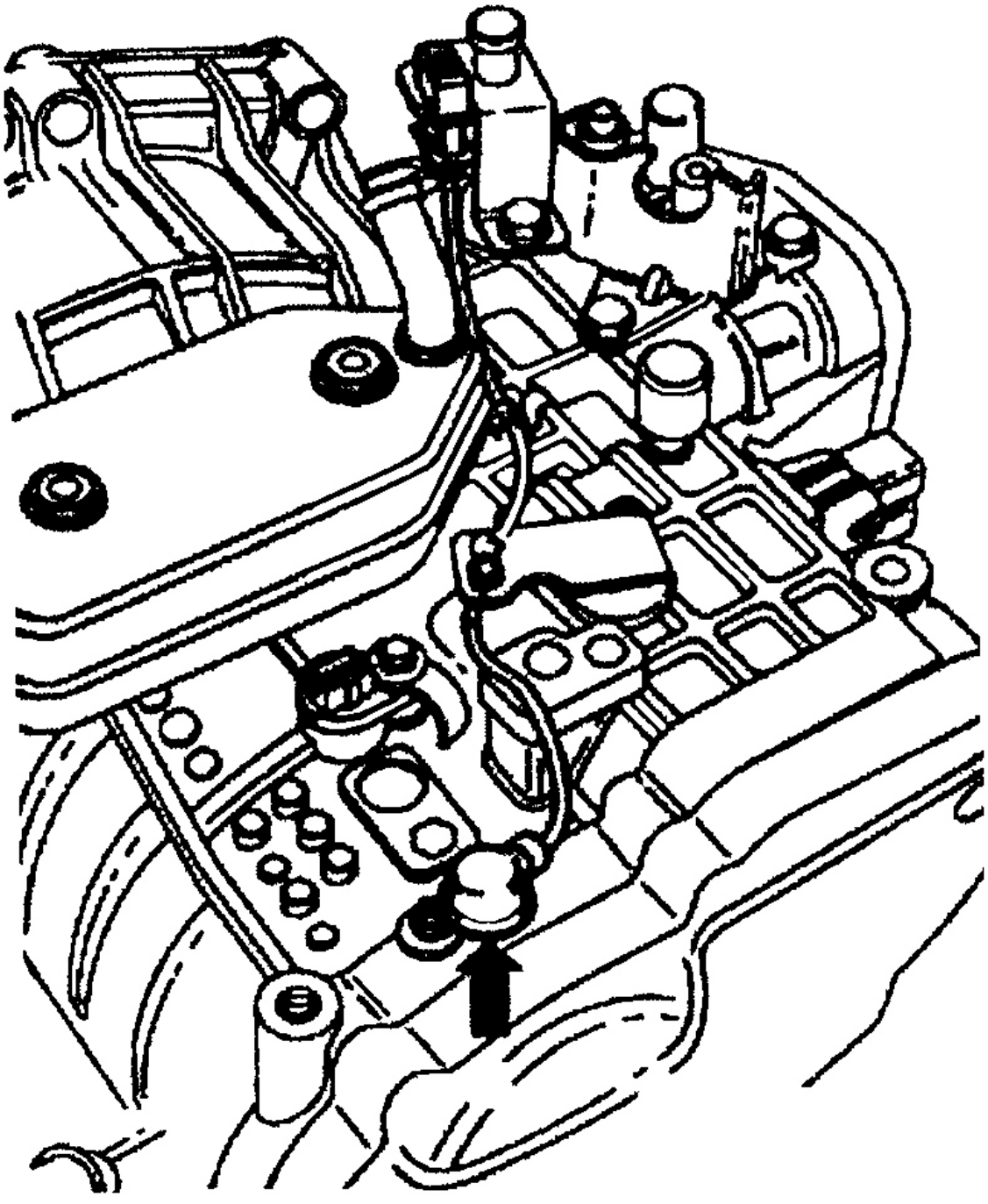
NOTE: In the following procedures, letters and numbers in parenthesis are shown in illustrations.

NOTE: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle.

CAUTION: Radio/cassette or radio/CD player is equipped with an anti-theft protection circuit. Whenever battery is disconnected, radio will go into anti-theft mode. When battery is reconnected, radio will display CODE, and will be inoperative until proper code number is entered. Obtain security code before disconnecting battery.

1. Vehicle speed sensor (arrow) is located on top of the transaxle. See **Fig. 50** . Sensor is covered by the left assembly mounting. Turn ignition switch off and disconnect negative battery cable. Remove battery. Remove air cleaner.
2. **NOTE: It may be necessary to remove hose and cable connections in area of engine mounting eye for Support Bar (10-222 A).**

   Install Support Bar (10-222 A) with Legs (10-222 A/1) and if necessary, Adapter (10-222 A/3). Support engine/transaxle in this position. Remove bracket for power steering pressure hose. Do not remove the bolts for the transaxle carrier (arrows) until the transaxle has been supported. See **Fig. 51** .
3. Remove pendulum support bolts (arrows) and support. See **Fig. 52** . Lower transaxle about 2.36" (60 mm) (a). See **Fig. 53** . Pull Black connector off sensor. Remove bolt and pull sensor (1) out. To install, reverse removal procedure. Replace seal on sensor. Tighten transaxle carrier bolt and pendulum support bolts to specification. See **TORQUE SPECIFICATIONS** .



G00204395

Fig. 50: Locating Vehicle Speed Sensor (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

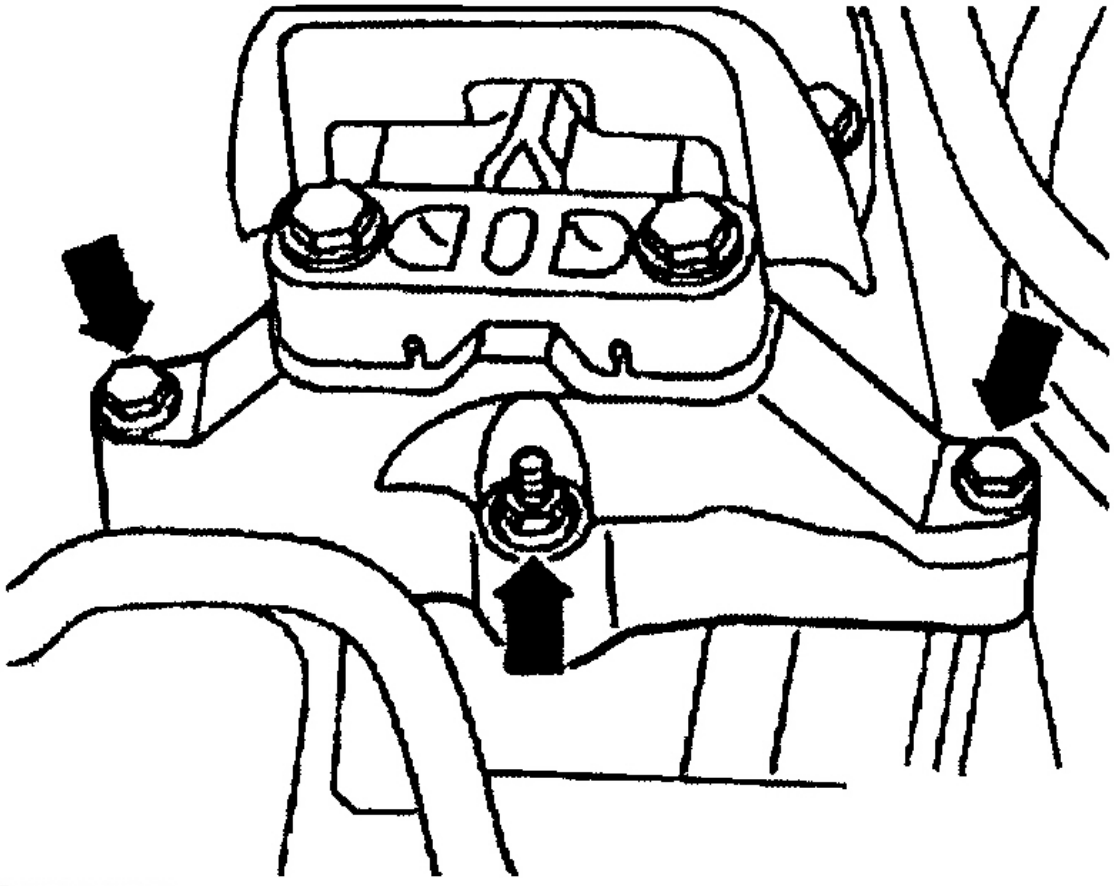


Fig. 51: Locating Transaxle Carrier Bolts (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

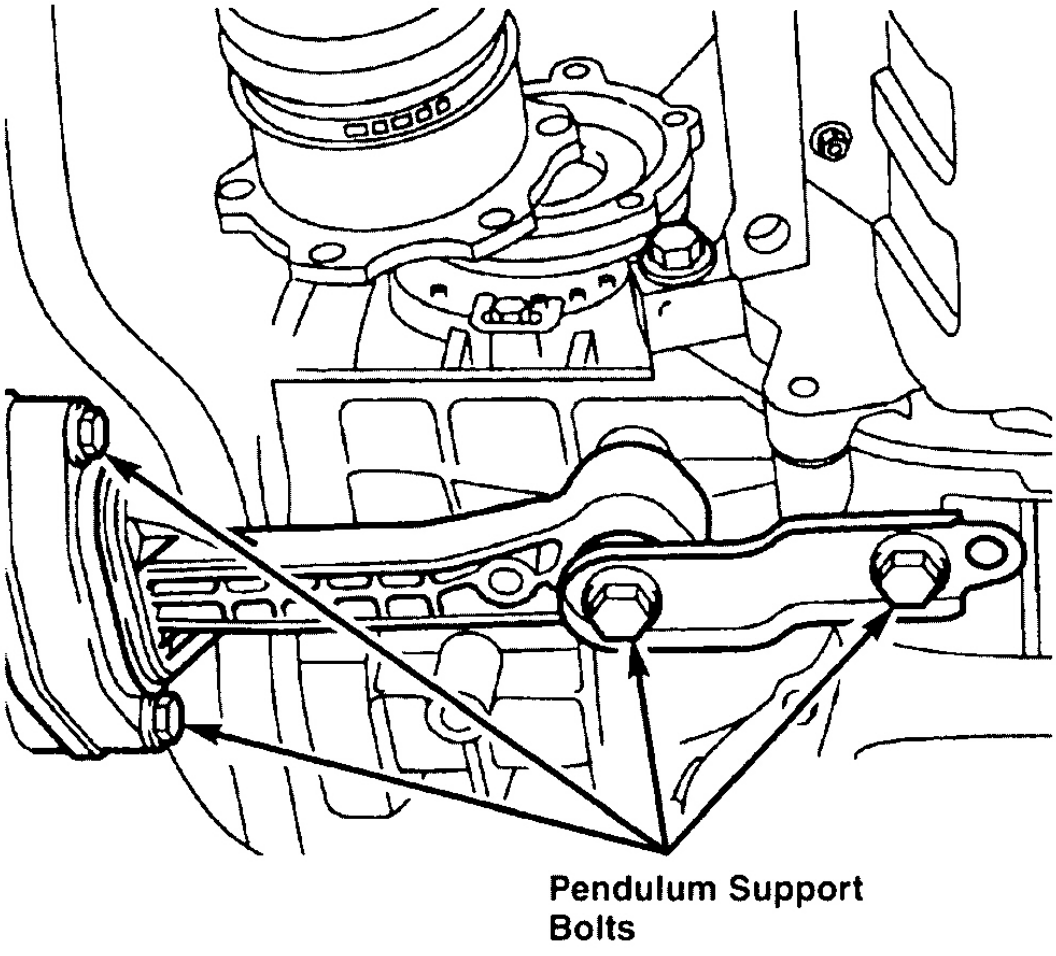
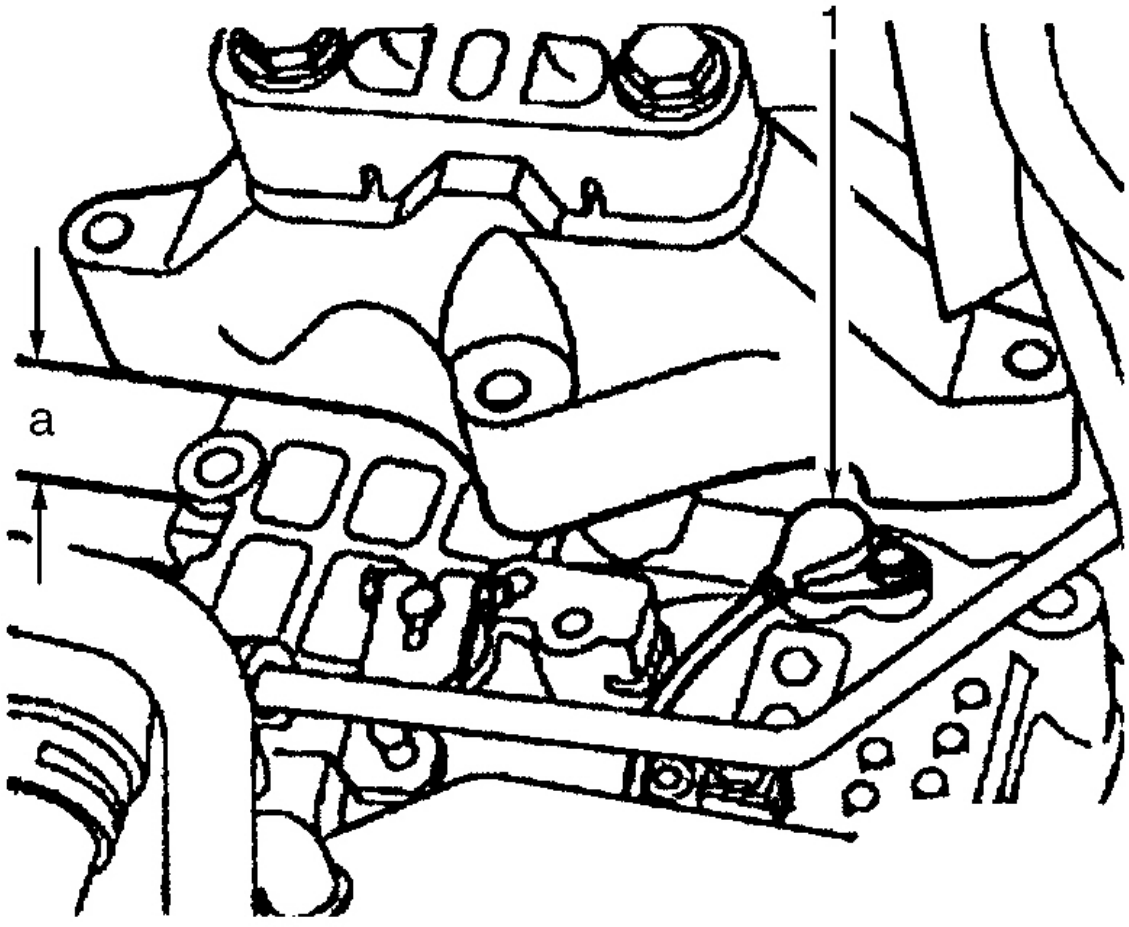


Fig. 52: Locating Pendulum Support Bolts (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00204397

Fig. 53: Lowering Transaxle To Remove Sensor (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01V Transaxle)

NOTE: In the following procedures, letters in parenthesis are shown in illustrations.

Remove left wheel. On vehicles equipped with TDI engine, remove left drive axle noise insulation from wheel housing. See **Fig. 10** . On all vehicles, remove left axle shaft protective plate. Pull connector (A) off sensor. Press down sensor retaining catch and turn (arrow). See **Fig. 54** . Pull out sensor. To install, reverse removal procedure. Replace "O" rings (arrows) and lubricate with gear oil before inserting. See **Fig. 55** . Install sensor and engage retaining catch on bearing bracket for flange shaft. Install left axle shaft protective plate. On vehicles equipped with TDI engine, install noise insulation at wheel housing. On all vehicles, install left wheel.

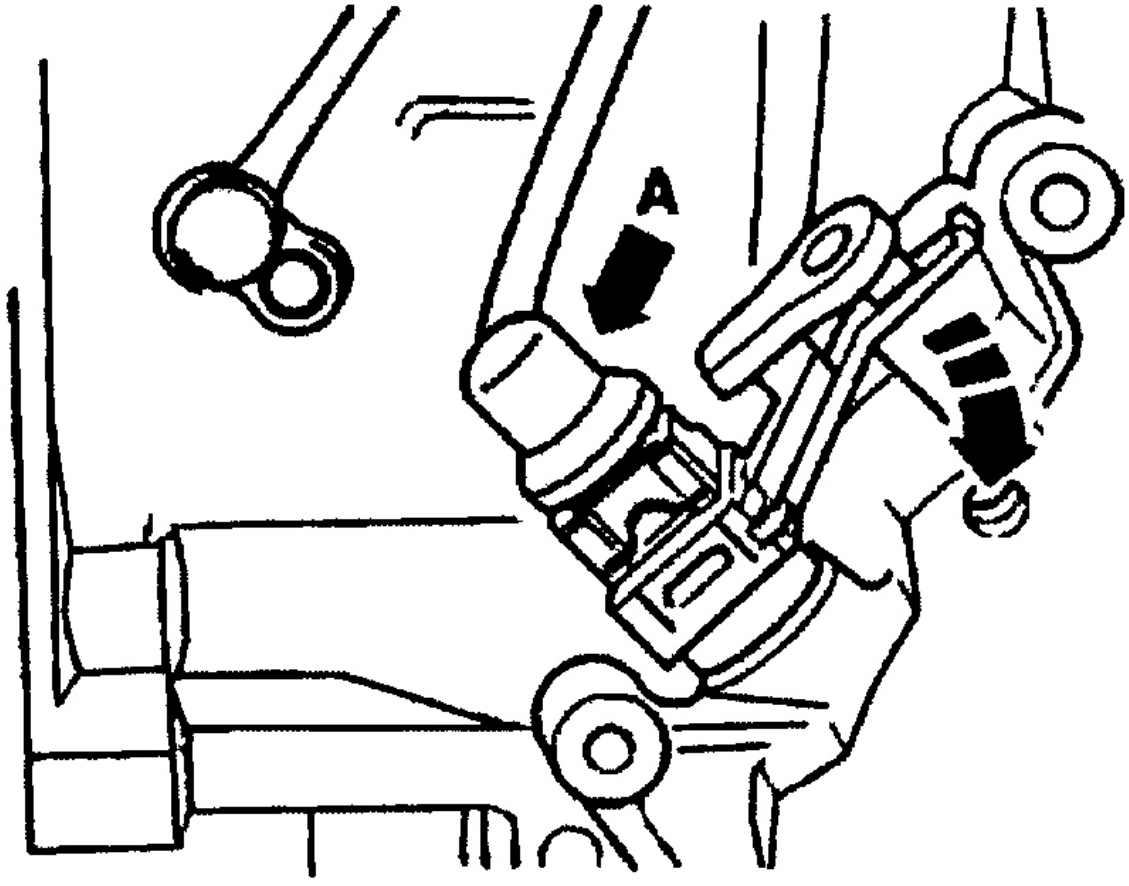
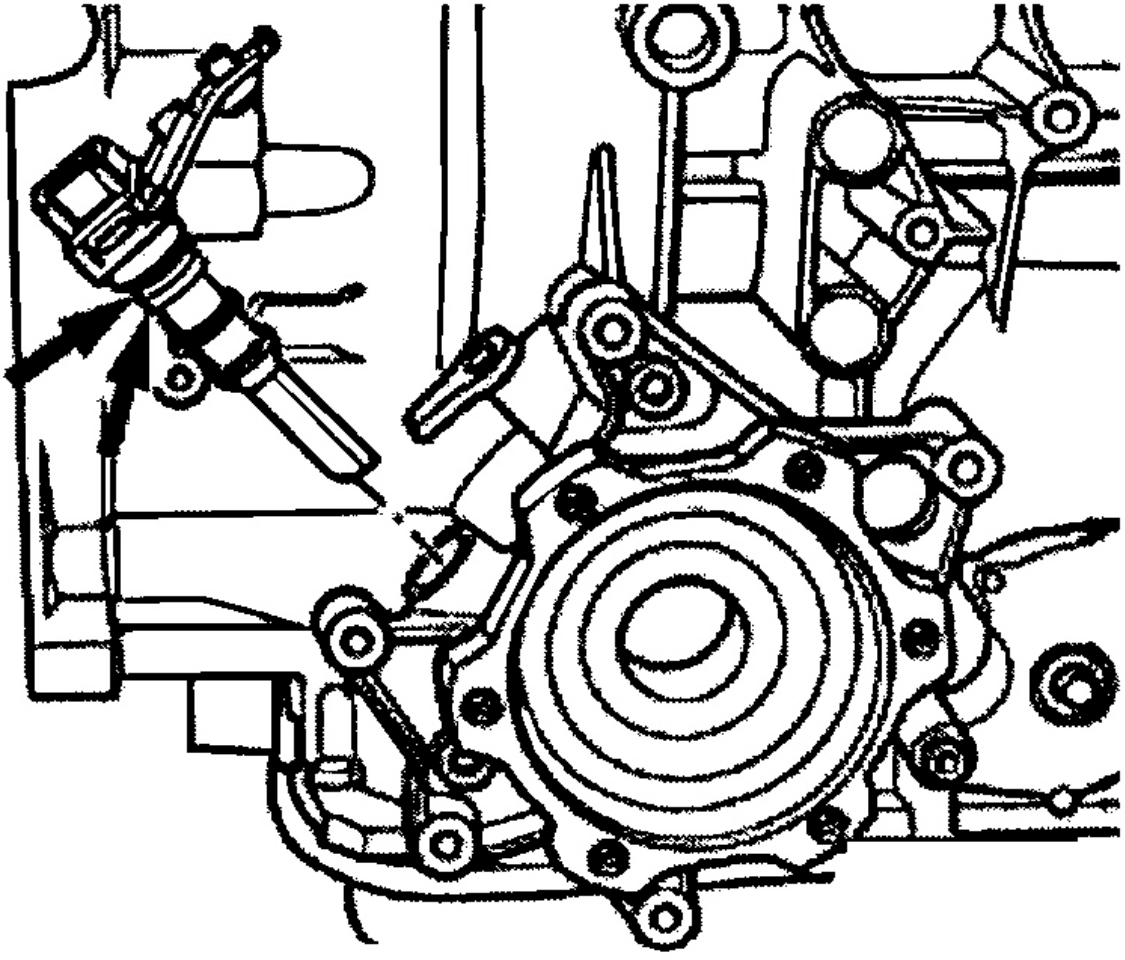


Fig. 54: Removing Vehicle Speed Sensor (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00204410

Fig. 55: Installing Vehicle Speed Sensor (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

VALVE BODY ASSEMBLY

Removal & Installation (01M Transaxle)

NOTE: In the following procedures, numbers in parenthesis are shown in illustrations.

NOTE: Code letters are stamped on a metal tab located on valve body for component identification. Metal tab must remain on the valve body. See Fig. 62 .

WARNING: Do not run engine or tow vehicle with oil pan removed or when there is no ATF in transaxle.

1. Place container under the transaxle. Remove level plug (1). Remove plug seal from plug. Remove overflow pipe (2) and allow ATF to drain. For Cabrio, see **Fig. 63** . For Golf, Jetta, GTI and New Beetle,

see **Fig. 64** . Screw overflow pipe in onto stop.

2. Remove oil pan bolts, oil pan, gasket and ATF screen. To remove conductor strip, place Pry Bar (3373) onto stop under the solenoid valve plug. Pull plug off with pry bar in direction of arrow. Remove bolt (1). See **Fig. 56** .
3.

NOTE: When removing the valve body, the manual selector valve (1) remains in valve body. See Fig. 57 . Do not interchange manual selector valves of valve bodies.

Remove valve body bolts and valve body. Shift selector lever/shaft into "1" position. Pull manual selector valve out until it is just possible to unhook the operating rod (2). See **Fig. 57** . Secure manual selector valve so that it cannot fall out.

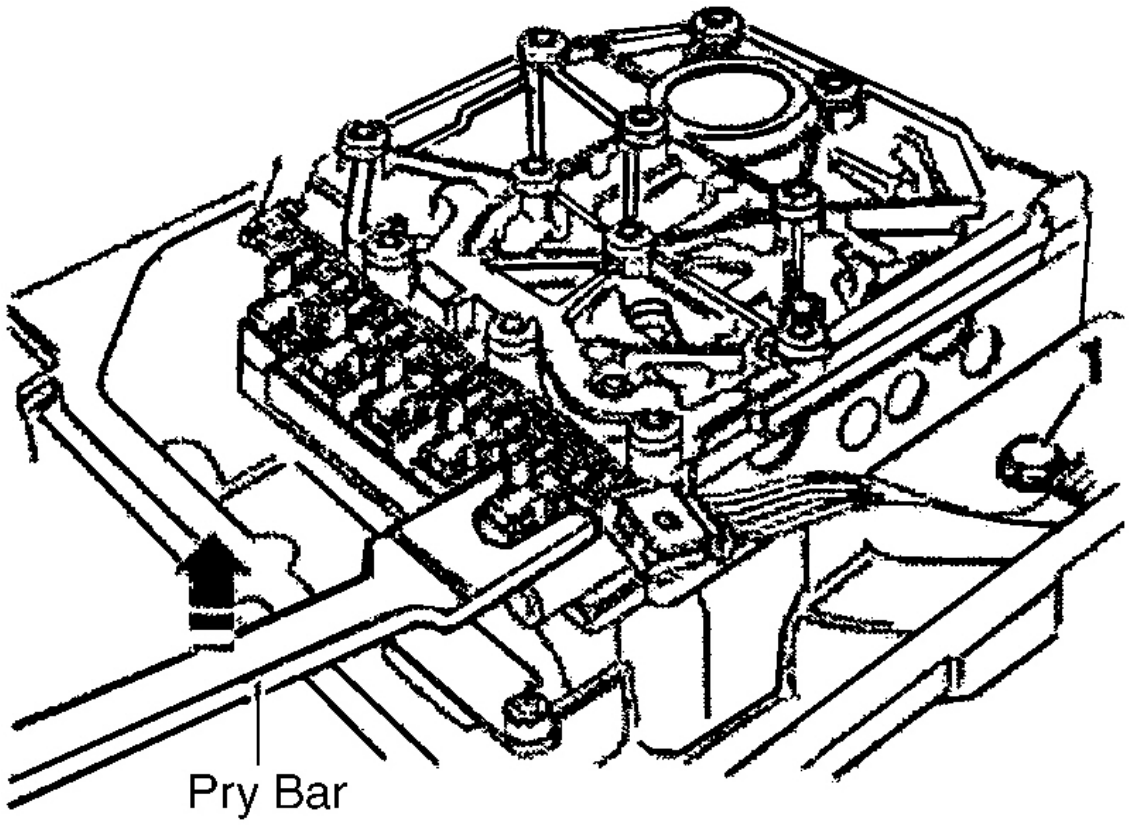
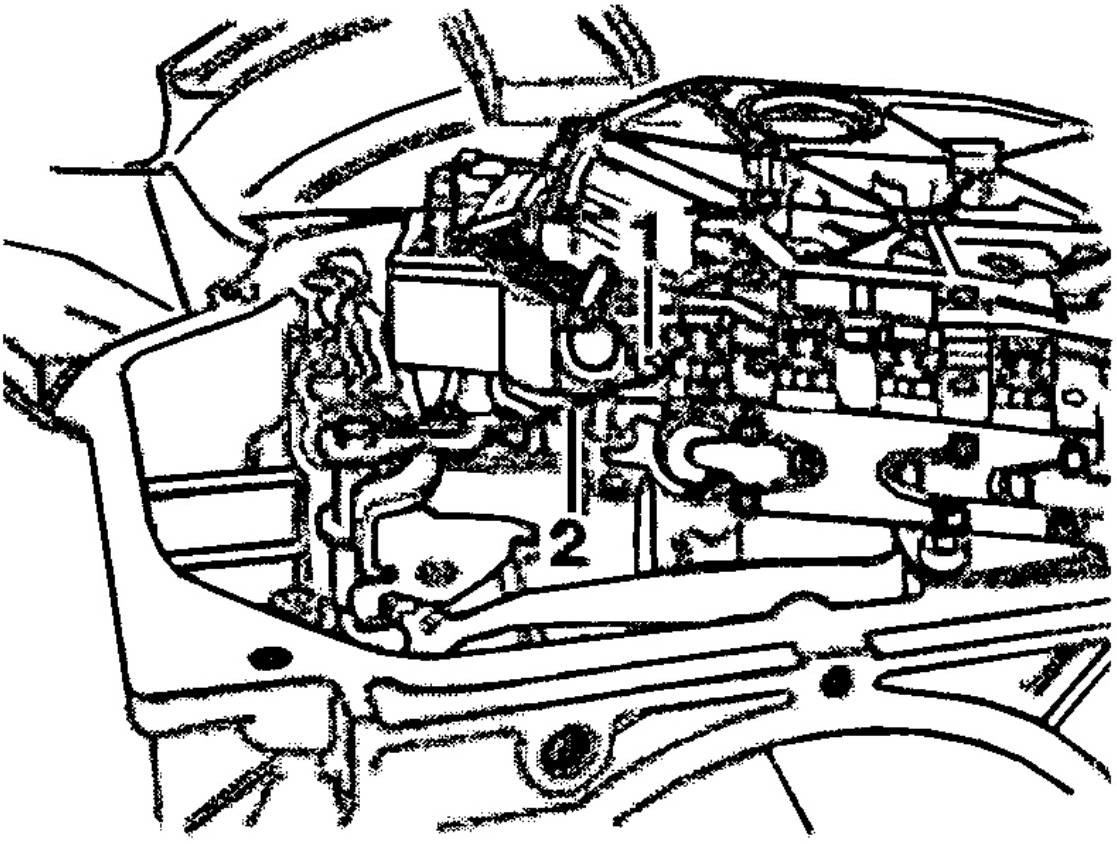


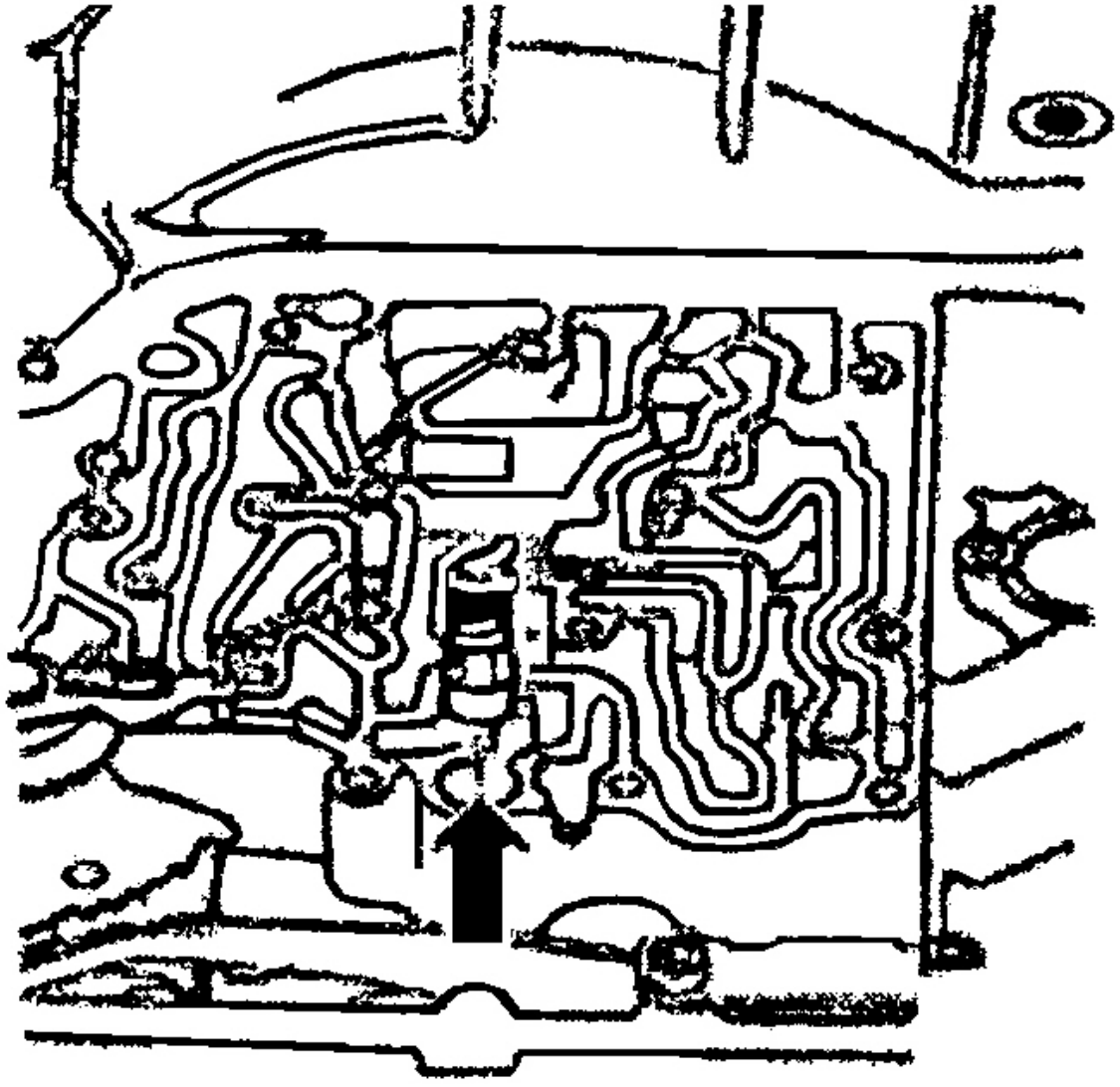
Fig. 56: Removing Conductor Strip
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00204364

Fig. 57: Removing Valve Body & Unhooking Operating Rod
Courtesy of VOLKSWAGEN UNITED STATES, INC.

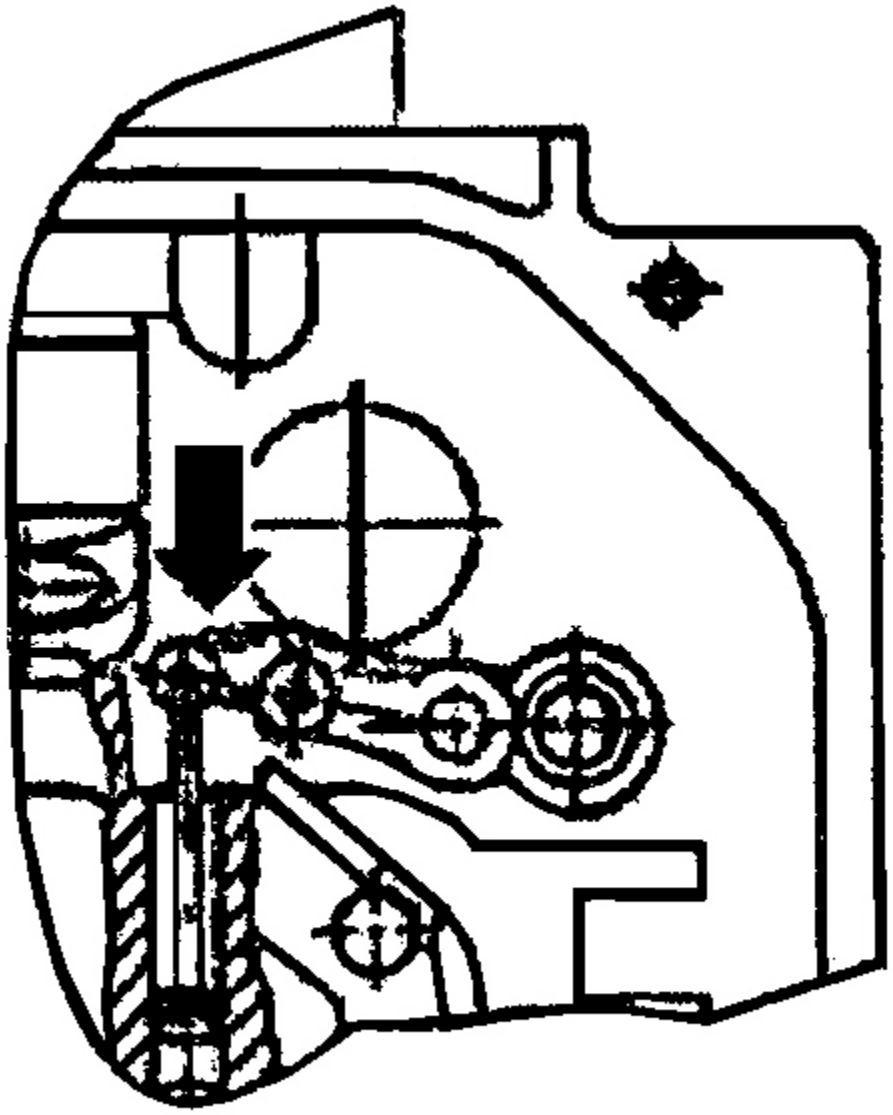
4. Note installation direction of sealing plug. Pull sealing plug out of housing before removing and installing free wheel, otherwise the sealing plug and the "O" ring will be damaged. Moisten 2 new "O" rings with ATF and install to sealing plug. Insert sealing plug in hole in transaxle housing (arrow). See **Fig. 58** .



G00204366

Fig. 58: Inserting Sealing Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

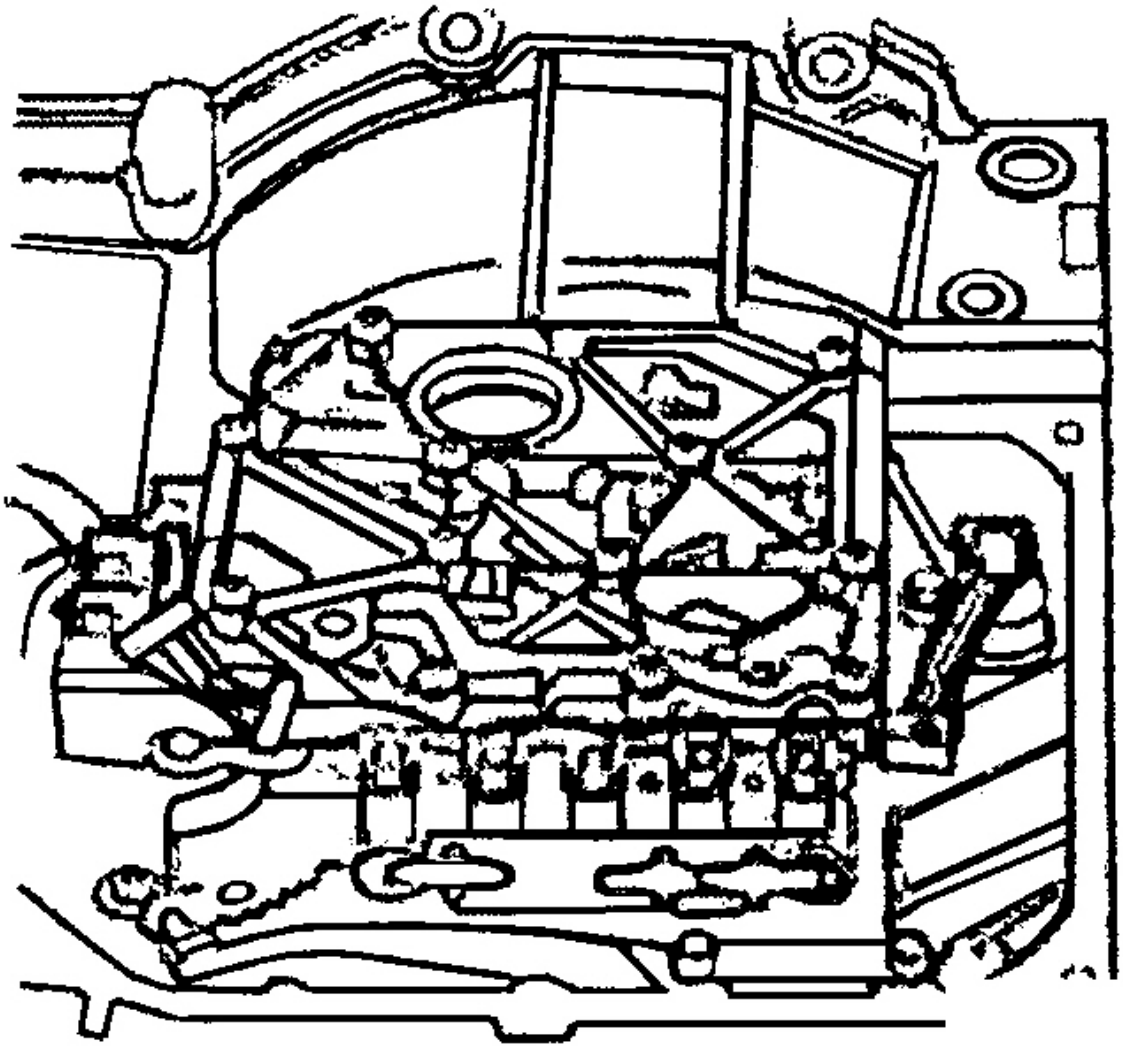
5. Secure operating rod onto manual selector valve by shifting selector lever/shaft into "1" position. Turn manual selector valve so that shoulder faces operating rod. Guide operating rod with manual selector valve into valve body.
6. To adjust operating rod for manual selector valve, move selector shaft to "P" position. Push operating rod with manual selector valve into valve body onto stop (direction of arrow) and tighten bolt to 35 INCH lbs. (4 N.m). See **Fig. 59** . Ensure selector valve is resting against the stop. Counter-hold when tightening bolt. Always replace bolt and manual selector valve retaining clip.



G00204383

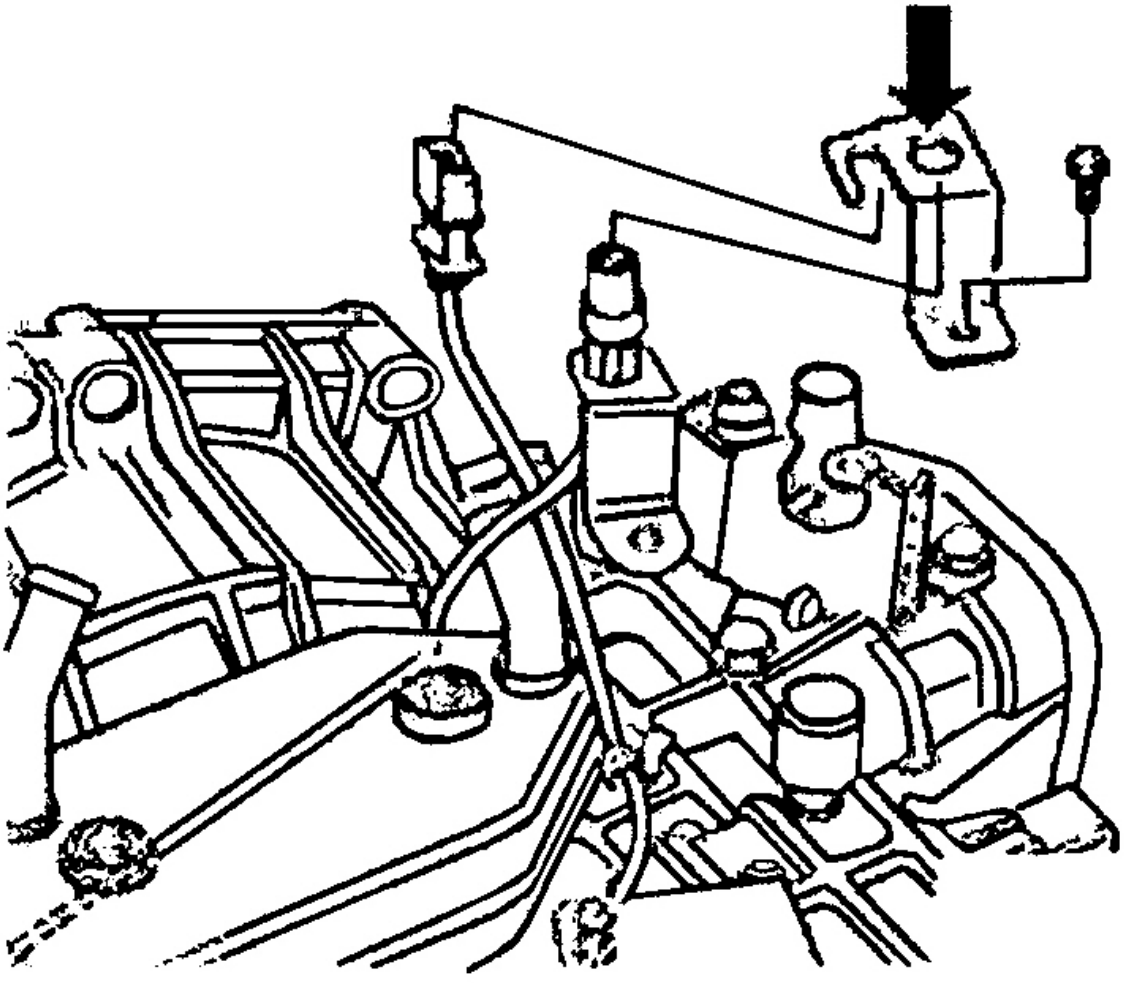
Fig. 59: Adjusting Operating Rod For Manual Selector Valve (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

7. Install valve body and bolts. Tighten bolts to 44 INCH lbs. (5 N.m). When installing conductor strip, route conductor strip as shown in illustration. See **Fig. 60** . Ensure conductor strip is not kinked or twisted.
8. Before installing the ATF screen, insert seal in valve body. Firmly press ATF screen onto valve body. Secure clip with bolt for conductor strip connector by connecting conductor strip connector to lower retainer. Install upper retainer with recess (arrow) onto connector tab. Tighten bolt to 15 ft. lbs. (20 N.m). See **Fig. 61** . Install oil pan, gasket and bolts. Tighten bolts to 106 INCH lbs. (12 N.m).



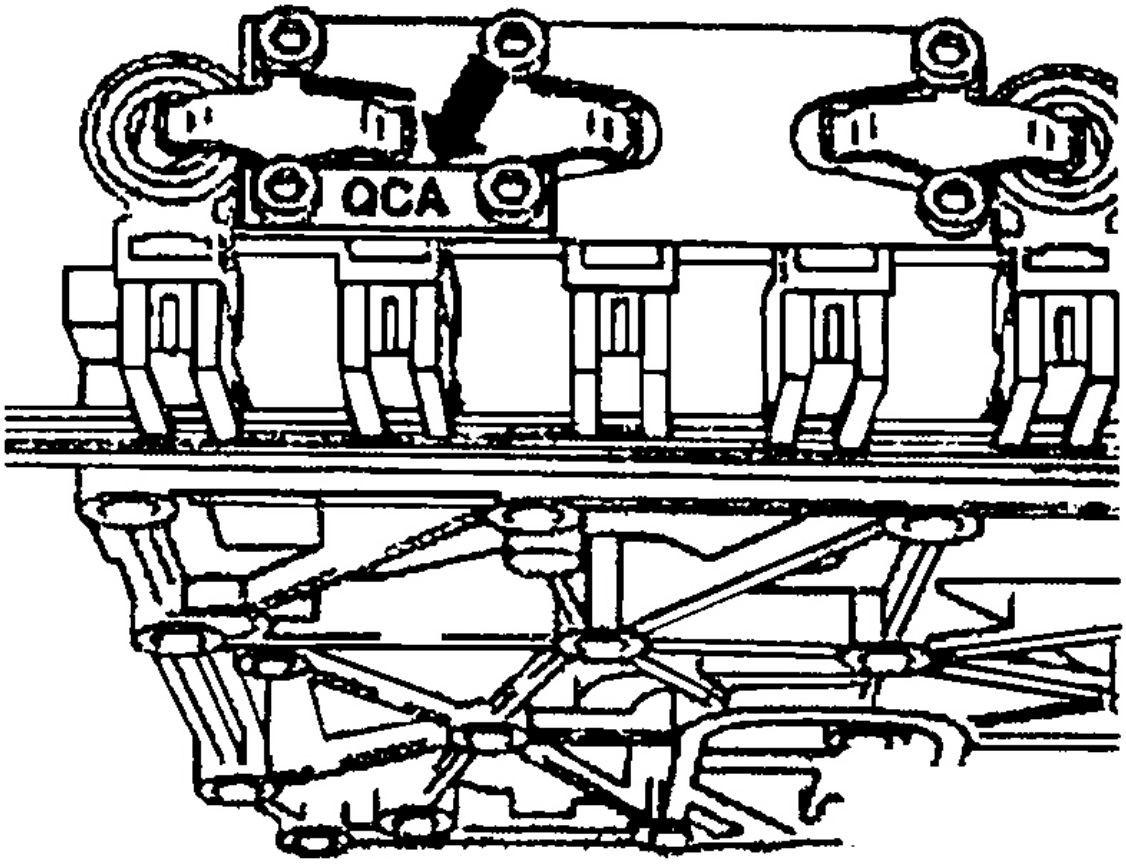
G00204384

Fig. 60: Installing Conductor Strip (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



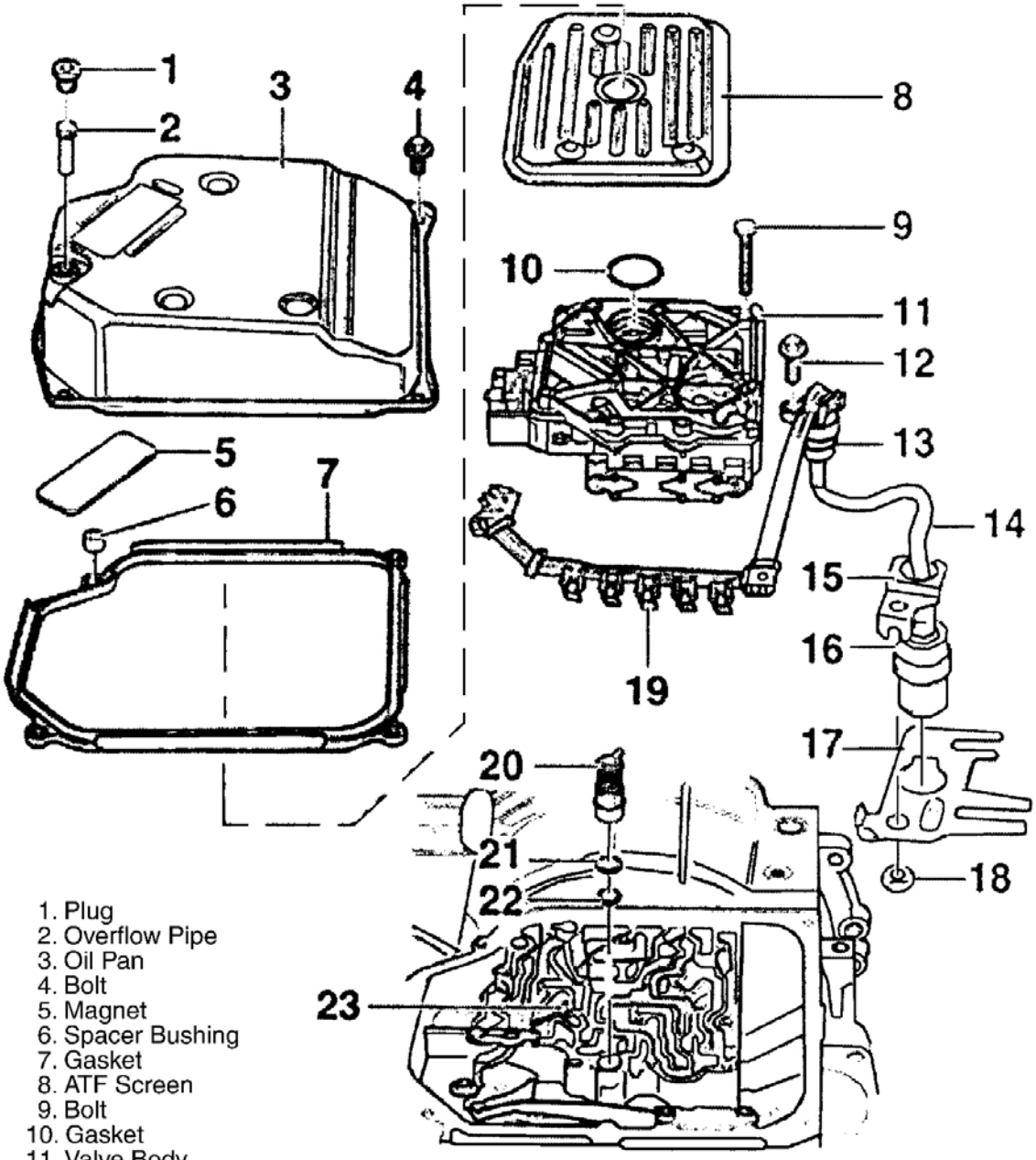
G00204385

Fig. 61: Installing Upper Retainer Onto Connector Tab (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00204386

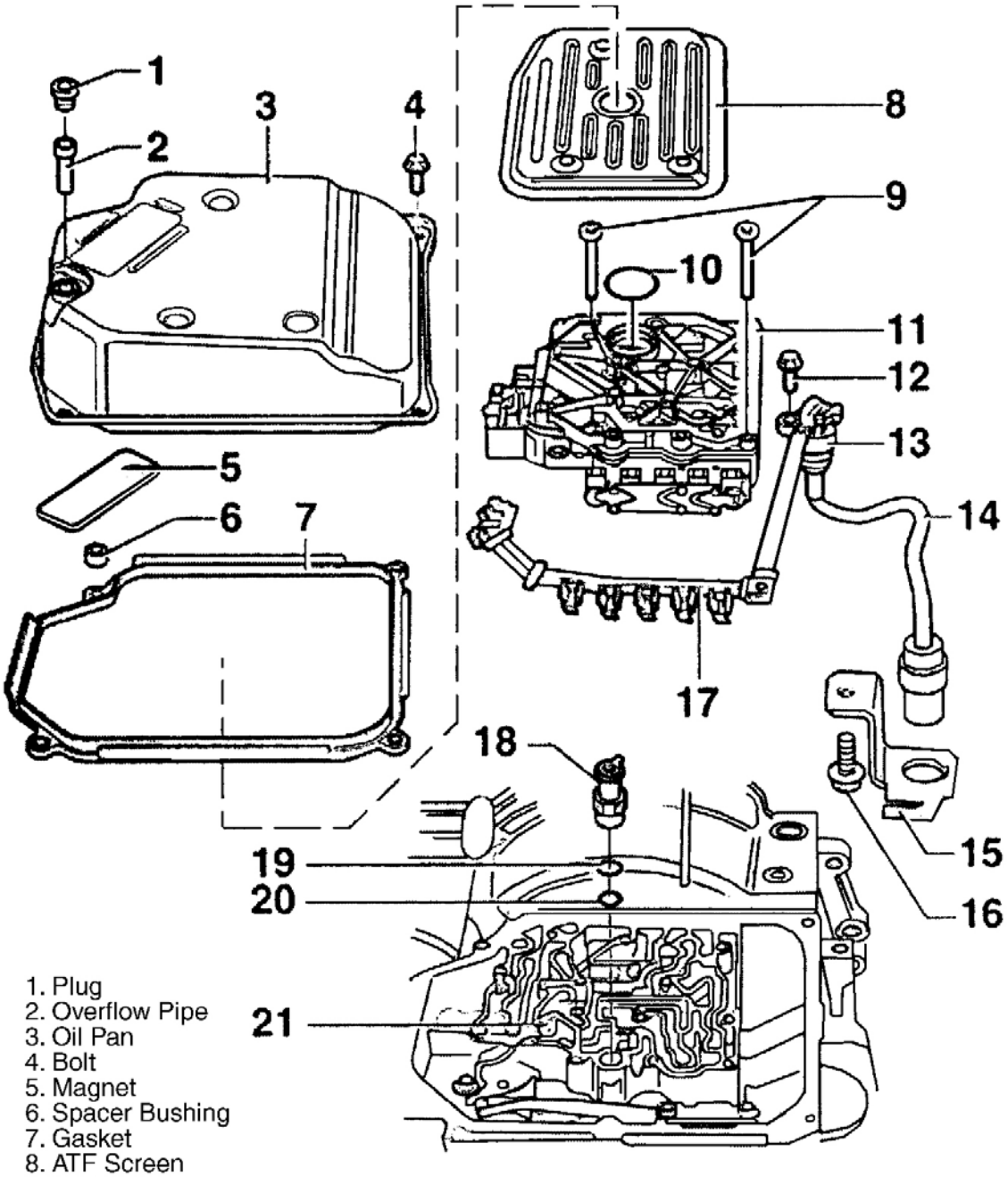
Fig. 62: Locating Valve Body Identification Tab (01M Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1. Plug
2. Overflow Pipe
3. Oil Pan
4. Bolt
5. Magnet
6. Spacer Bushing
7. Gasket
8. ATF Screen
9. Bolt
10. Gasket
11. Valve Body
12. Bolt
13. "O" Ring
14. Conductor Strip (For Solenoids)
15. Retaining Bracket
16. Wiring Connector
17. Clip
18. Nut
19. Plug For Solenoid Valves
20. Sealing Plug
21. "O" Ring
22. "O" Ring
23. Operating Rod For Manual Selector Valve

G00204382

Fig. 63: Exploded View Of Valve Body Components (01M Transaxle - Cabrio)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1. Plug
2. Overflow Pipe
3. Oil Pan
4. Bolt
5. Magnet
6. Spacer Bushing
7. Gasket
8. ATF Screen
9. Bolt
10. Gasket
11. Valve Body
12. Bolt
13. "O" Ring
14. Conductor Strip (For Solenoids)
15. Retaining Bracket
16. Bolt
17. Plug For Solenoid Valves
18. Sealing Plug
19. "O" Ring
20. "O" Ring
21. Operating Rod For Manual Selector Valve

G00204398

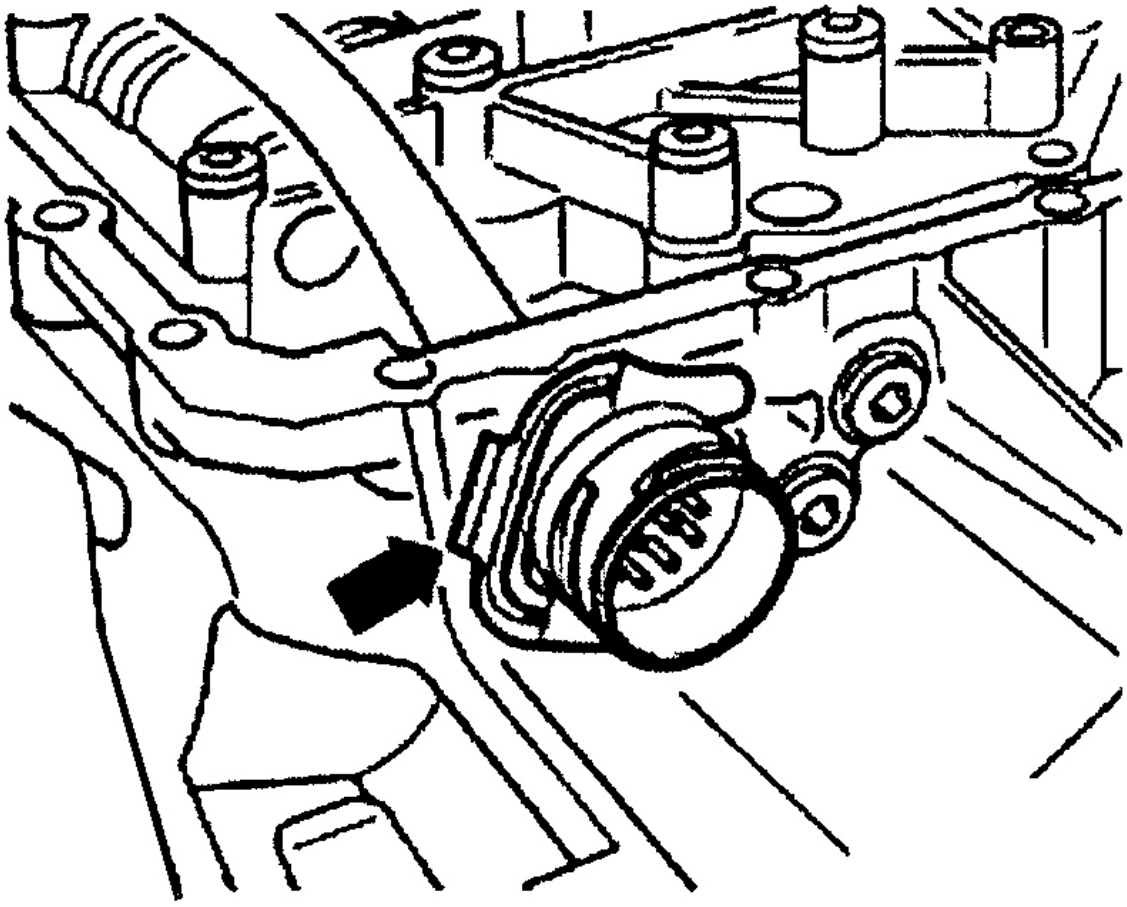
Fig. 64: Exploded View Of Valve Body Components (01M Transaxle - Golf, GTI, Jetta & New Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal & Installation (01V Transaxle)

NOTE: Transaxle uses 2 different hydraulic control system valve body designs. Valve bodies are identified as E17 and E18. The following procedures apply to both valve body designs. For valve body exploded views, see Fig. 72 and Fig. 73 .

NOTE: In the following procedures, letters and numbers in parenthesis are shown in illustrations.

1. On vehicles with auxiliary heater, remove exhaust pipe bolts at noise insulation. On all vehicles, remove noise insulation tray. See **Fig. 25** . Place drain pan under transaxle. Remove drain plug. See **Fig. 14** . Drain ATF. Unscrew bolts on oil pan in diagonal sequence and remove oil pan. Unscrew 2 bolts on ATF screen. See **Fig. 43** . Pull ATF screen off valve body. Pry securing clip (arrow) off wiring harness connector. See **Fig. 65** .



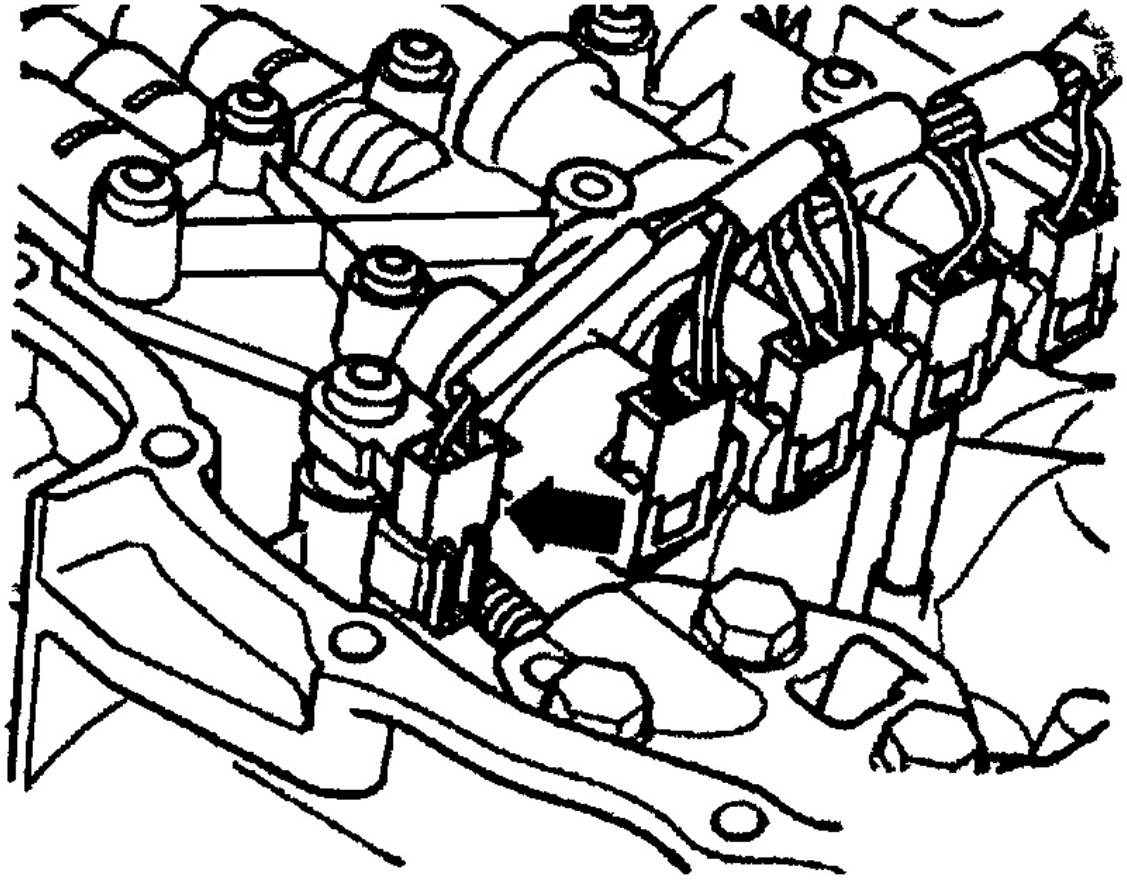
G00219310

Fig. 65: Removing Securing Clip Off Wiring Harness Connector (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2. On both valve bodies, pull connector (arrow or "A") off transaxle vehicle speed sensor. See **Fig. 66** and

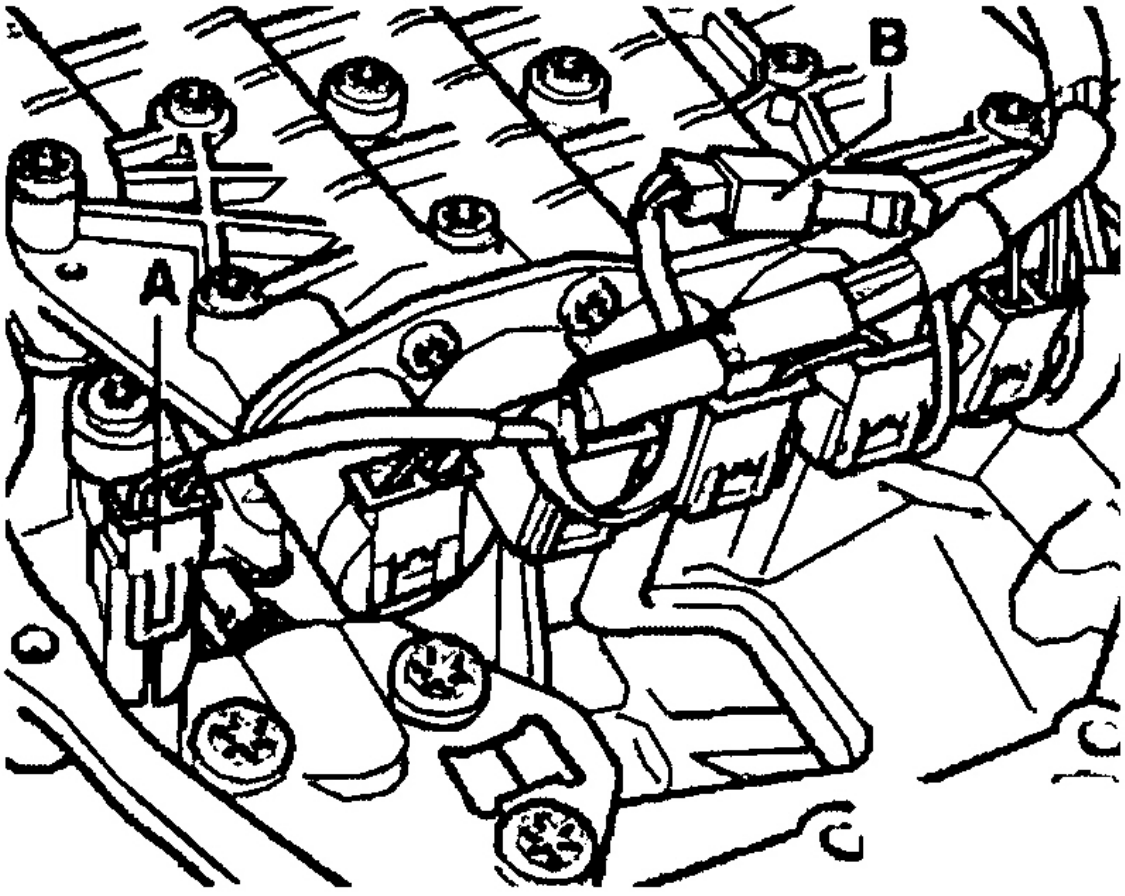
Fig. 67 . On E18 valve body, pull connector "B" off transaxle RPM sensor. See **Fig. 67** . On both valve bodies, only remove the bolts from the valve body which are marked with an arrow. See **Fig. 68** . On E18 valve body, bolt (A) does not apply and should be ignored. On E17 valve body, bolt (A) is shorter than all the other bolts.

3. On both valve bodies, do not remove any other bolts as this could influence the function of the valve body. Detach valve body from transaxle and guide out connector on wiring harness. On E17 valve body, do not place valve body upside down on transaxle RPM sensor.



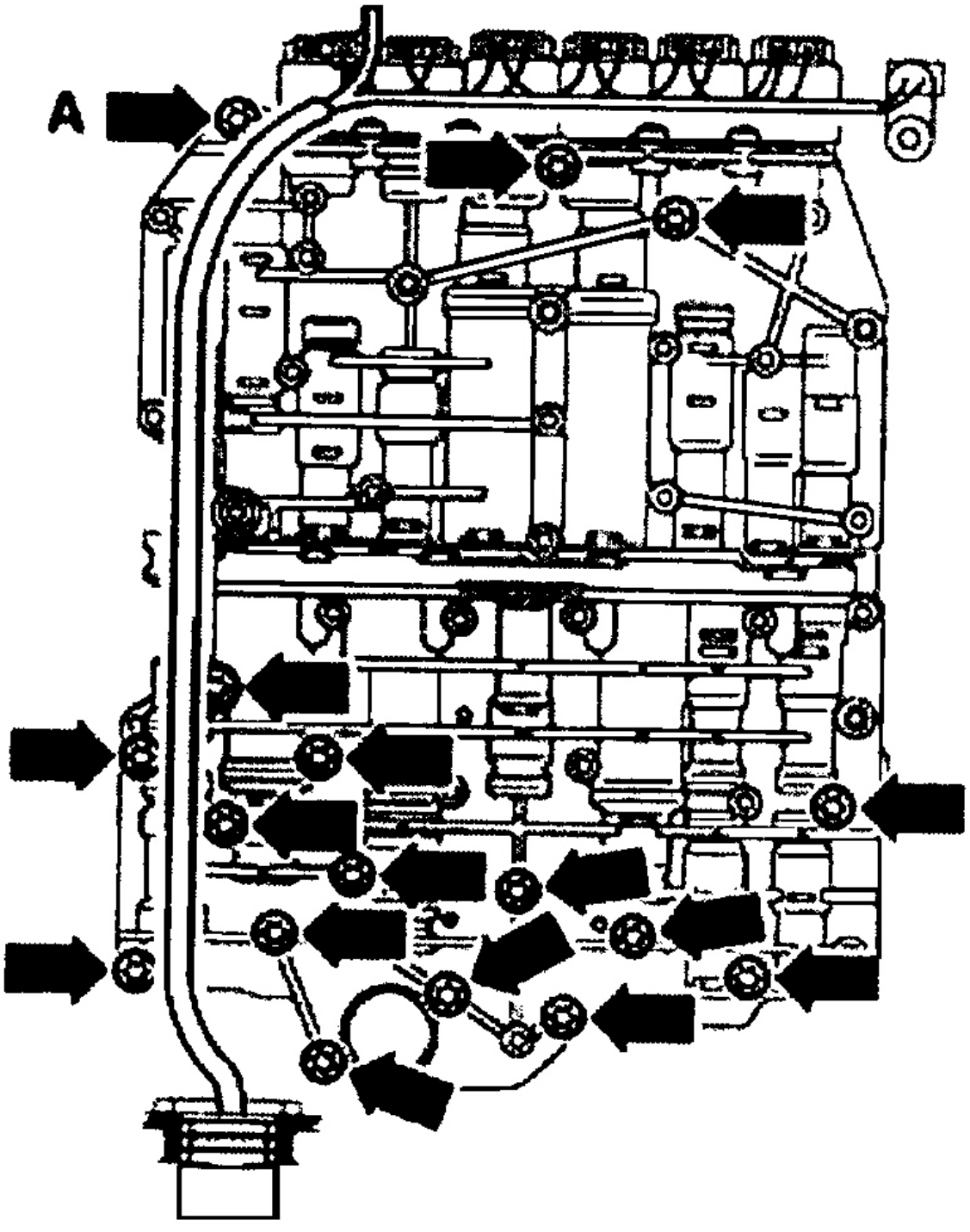
G00219311

Fig. 66: Removing Transaxle Vehicle Speed Sensor Connector (01V Transaxle - E17 Valve Body)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00219312

Fig. 67: Removing Transaxle Vehicle Speed Sensor Connector (01V Transaxle - E18 Valve Body)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



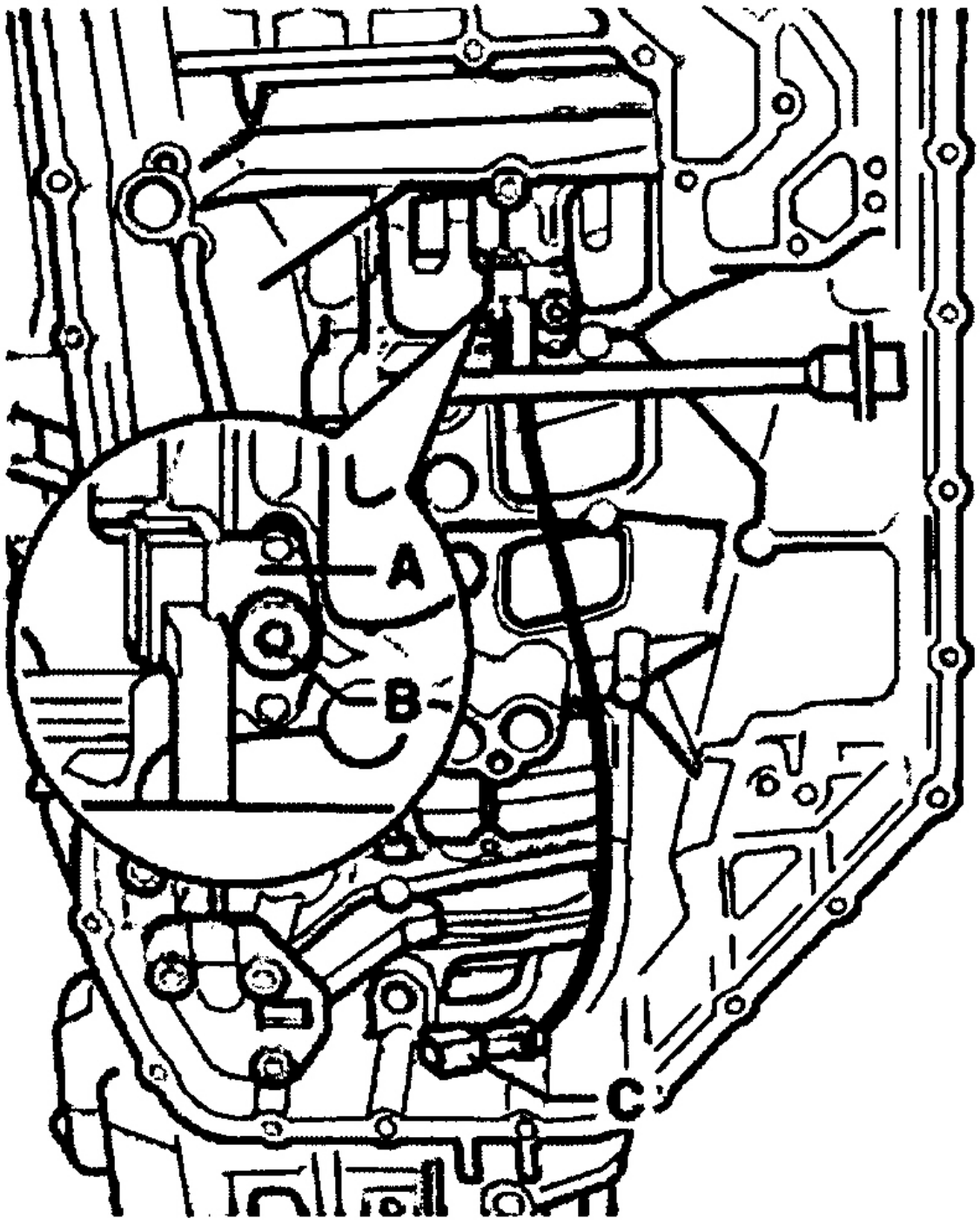
G00219313

Fig. 68: Removing & Installing Valve Body Bolts (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

4. To install, reverse removal procedure. On E18 valve body, to ensure wiring harness does not become trapped when installing the valve body, route the wire with connector (C) according to the illustration.

See **Fig. 69** . On both valve bodies, lubricate NEW "O" rings for connector on wiring harness with ATF. Install connector in transaxle housing with flat part (A) facing toward oil pan. See **Fig. 70** .

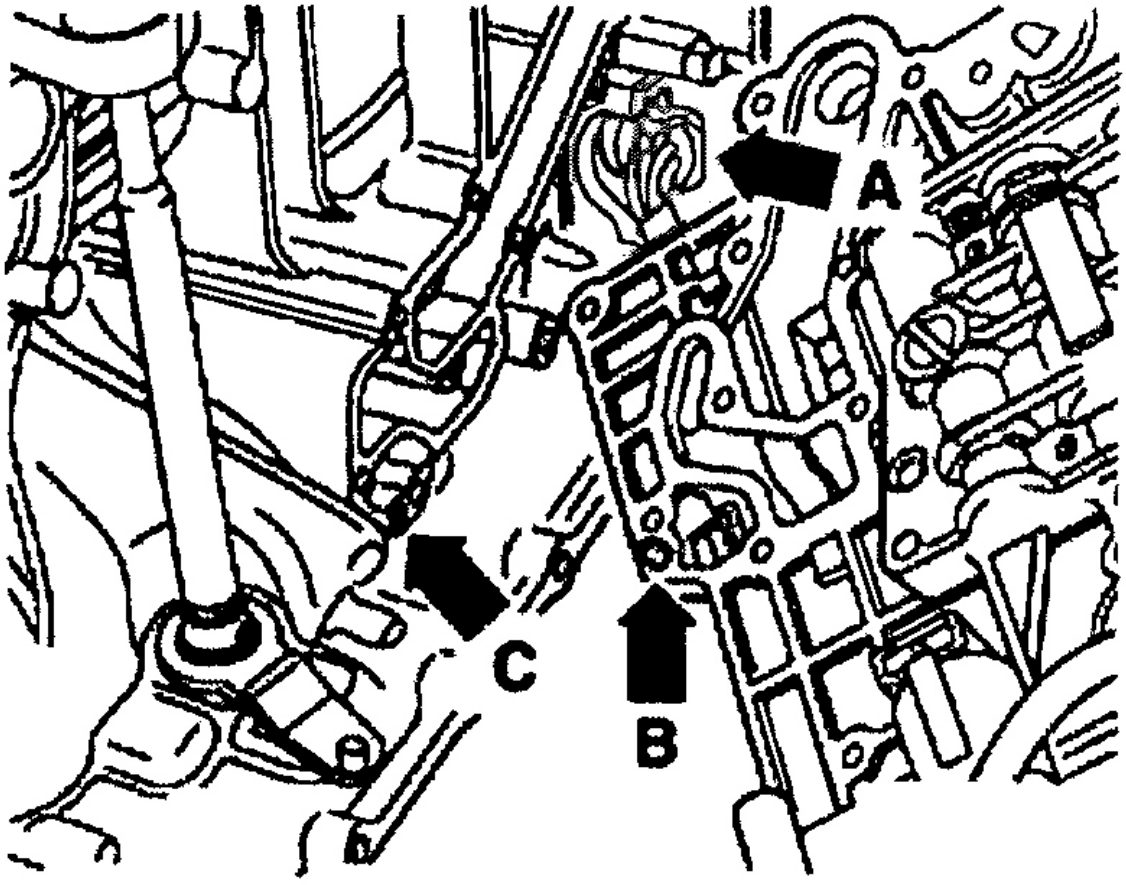
5. Align dowel pin on valve body (B) with hole in transaxle housing (C). See **Fig. 70** . Place valve body in position so that pin of detent plate (1) engages in slot on selector slide (2). See **Fig. 71** .



G00219314

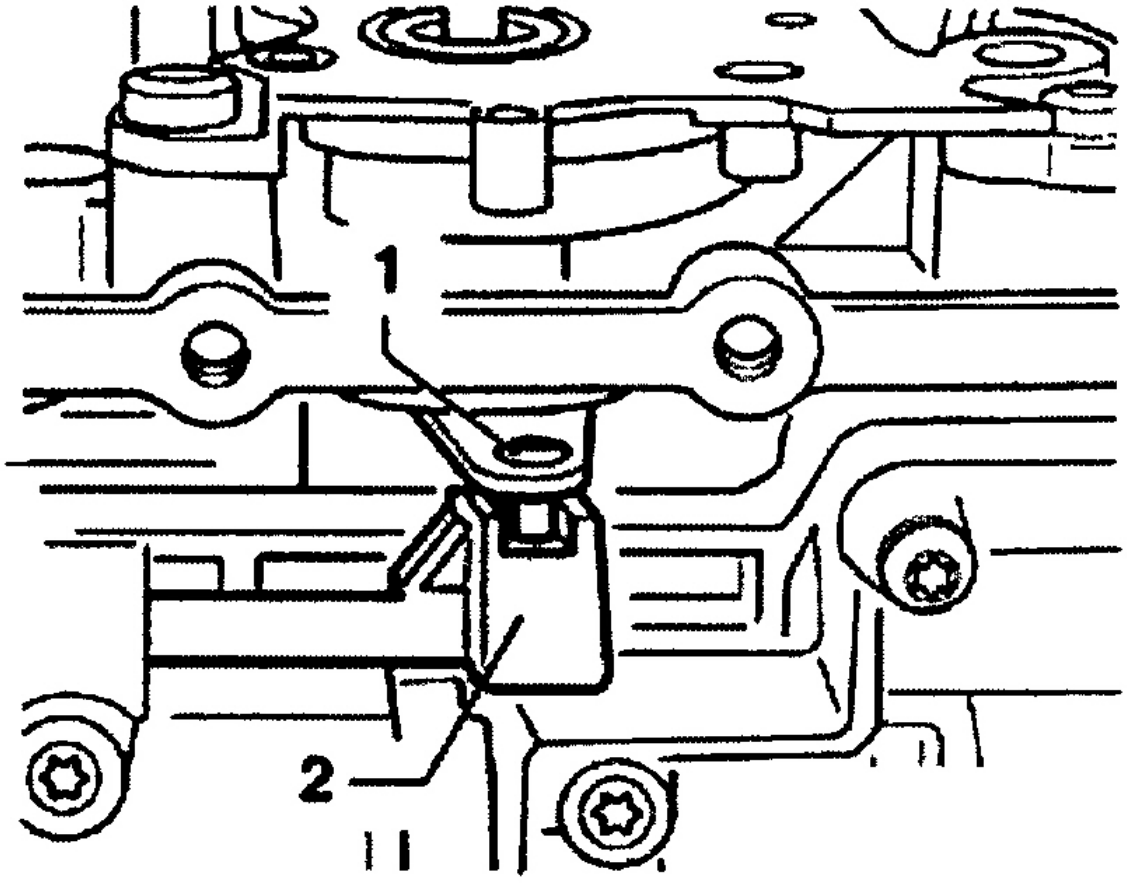
Fig. 69: Routing Wiring Harness (01V Transaxle - E18 Valve Body)

Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00219315

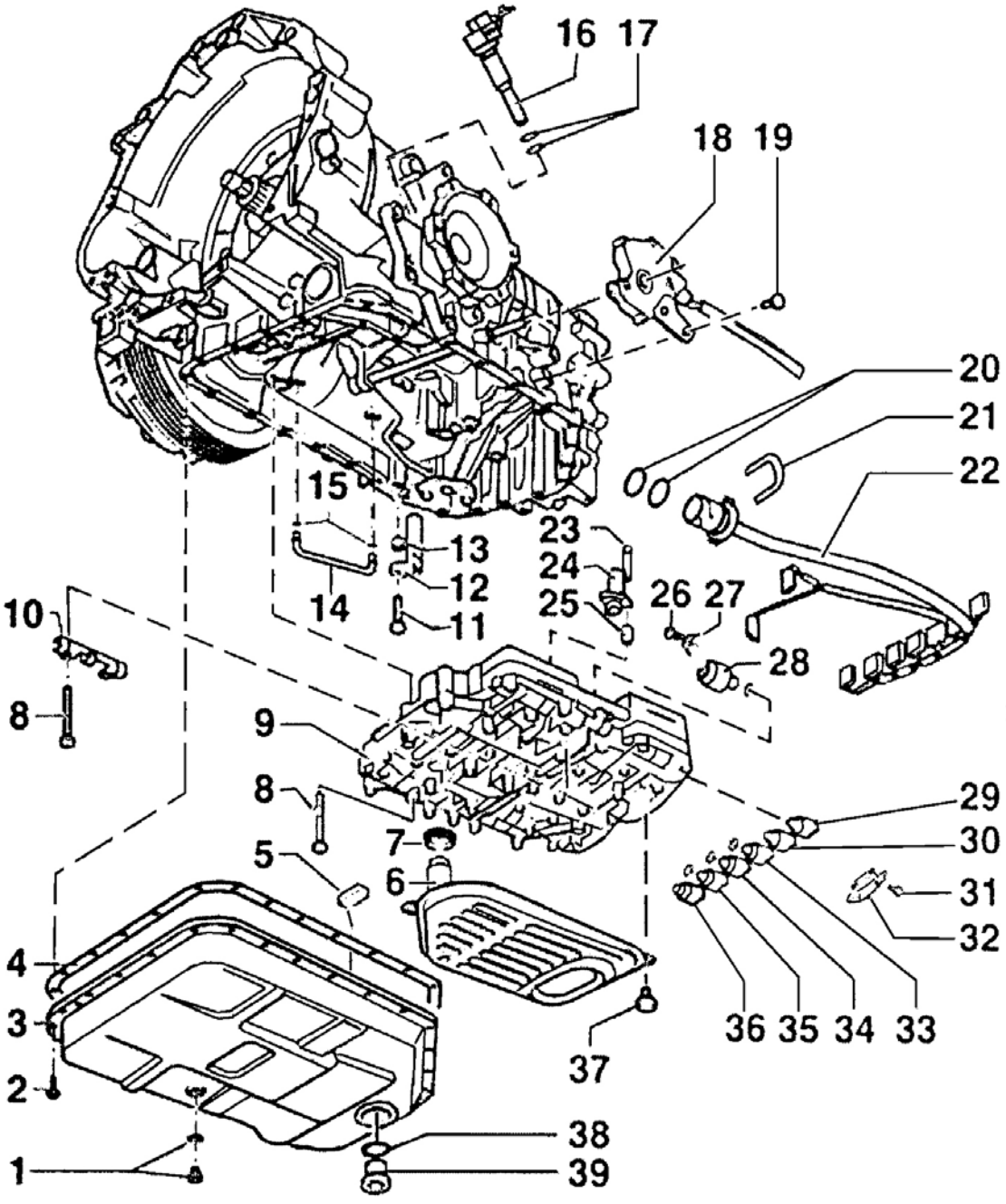
Fig. 70: Installing Connector & Aligning Dowel Pin With Hole (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00219316

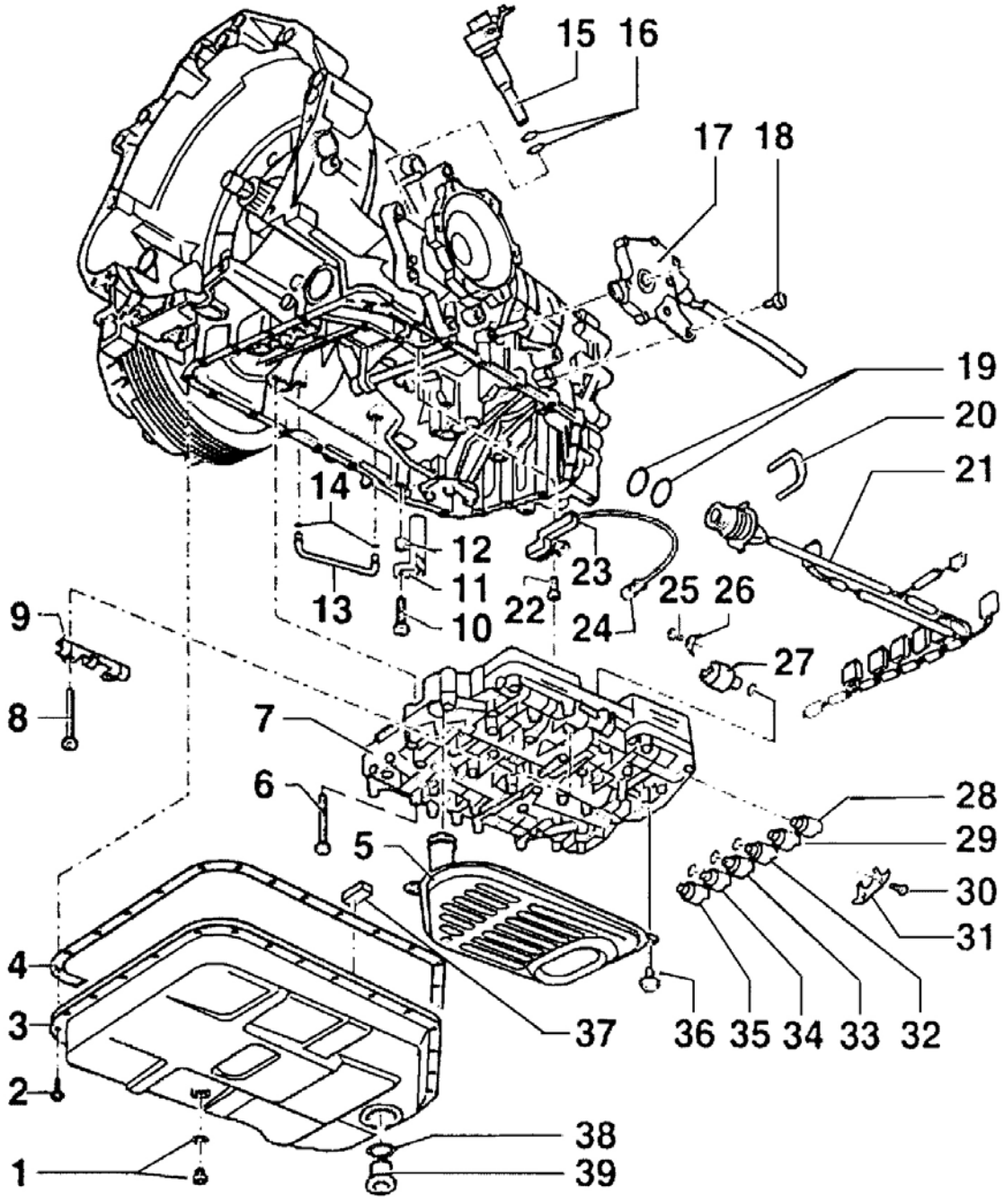
Fig. 71: Engaging Detent Plate Pin In Slot (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

6. Tighten bolts (arrows) hand tight, securing valve body. On E18 valve body, bolt (A) does not apply and should be ignored. On E17 valve body, bolt (A) is shorter than all the other bolts. See **Fig. 68** . Tighten bolts to 71 INCH lbs. (8 N.m), working from the inside of valve body outward. Connect transaxle vehicle speed sensor connector. Pull up wire to transaxle RPM sensor (if equipped) between valve body and wiring harness.
7. Press in securing clip for wiring harness connector until retaining tab engages. Moisten seal on intake neck of ATF screen with ATF. Carefully push intake neck of ATF screen in opening of valve body. Install ATF screen and tighten bolts to 53 INCH lbs. (6 N.m).
8. Install oil pan with NEW gasket. Tighten oil pan bolts to 89 INCH lbs. (10 N.m), in several stages and in diagonal sequence. Install drain plug and tighten to 30 ft. lbs. (40 N.m). Fill transaxle with ATF, check ATF level and top off. See **CHECKING FLUID LEVELS** under LUBRICATION.



1. Drain Plug
2. Bolt
3. Oil Pan
4. Gasket
5. Magnet
6. ATF Screen
7. Gasket
8. Bolt
9. Valve Body
10. Retainer
11. Bolt
12. Transaxle Vehicle
13. Spacer Sleeve
14. Internal Oil Pipe
15. "O" Ring
16. Vehicle Speed Sensor
17. "O" Ring
18. Multifunction TR Switch
19. Bolt
20. "O" Ring
21. Securing Cap
22. Wiring Harness
23. Bolt
24. Transaxle RPM Sensor
26. Bolt
27. Retainer
28. Solenoid Valve No.4
29. Solenoid Valve No. 3
30. Solenoid Valve No.2
31. Bolt
32. Retainer
33. Solenoid Valve No. 6
34. Solenoid Valve No. 7
35. Solenoid Valve No. 5
36. Solenoid Valve No. 1
37. Bolt
38. Oil Seal

Fig. 72: Exploded View Of E17 Valve Body Components (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1. Drain Plug
2. Bolt
3. Oil Pan
4. Gasket
5. ATF Screen
6. Bolt
7. Valve Body
8. Bolt
9. Retainer
10. Bolt
11. Transaxle Vehicle Speed Sensor
13. Internal Oil Pipe
14. "O" Ring
15. Vehicle Speed Sensor
16. "O" Ring
17. Multifunction TR Switch
18. Bolt
19. "O" Ring
20. Securing Clip
21. Wiring Harness
22. Bolt
23. Transaxle RPM Sensor
24. Connector
26. Retainer
27. Pressure Control Valve No. 1
28. Solenoid Valve No. 3
29. Solenoid Valve No. 2
30. Bolt
31. Retainer
32. Pressure Control Valve No. 3
33. Pressure Control Valve No. 4
34. Pressure Control Valve No. 2
35. Solenoid Valve No. 1
36. Bolt
37. Magnet
38. Oil Seal

Fig. 73: Exploded View Of E18 Valve Body Components (01V Transaxle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
ATF Cooler Line Bolt (01V)	15 (20)
ATF Level Plug	
01M	11 (15)
01V	30 (40)
ATF Inspection Plug (01V)	59 (80)
Center Differential Fill Plug (01V AWD)	26 (35)
Final Drive Fill Plug	
01M	(2)
01V	
Front Final Drive	22 (30)
Rear Final Drive (AWD)	26 (35)
Final Drive Inspection Plug (01M)	(1)
Oil Pan Drain Plug	
01V	30 (40)
Pendulum Support Bolt (01M Except Cabrio)	
Inner Bolt	
Step 1	15 (20)
Step 2	Turn Additional 90 Degrees
Outer Bolt	
Step 1	30 (40)
Step 2	Turn Additional 90 Degrees
Selector Lever Cable Bolt (Cabrio)	18 (25)
Selective Lever Cable Protective Plate Bolt (01V)	17 (23)
Selector Lever Cable Support Bracket Bolt (01V)	17 (23)
Transaxle Carrier Bolt	
Step 1	30 (40)
Step 2	Turn Additional 90 Degrees
Upper Retainer Bolt (01M)	15 (20)
	INCH Lbs. (N.m)
ATF Screen Bolt (01V)	53 (6)

Locking Cable Anchor Screw (Cabrio)	53 (6)
Locking Cable Support Bracket Bolt (01V)	89 (10)
Manual Selector Valve Bolt (01M)	35 (4)
Mounting Bracket Cover Nut (01V)	89 (10)
Oil Pan Bolt	
01M	106 (12)
01V	89 (10)
Selector Lever Cable Bolt (01M Except Cabrio)	71 (8)
Selector Lever Cable Mounting Bolt (01M - Cabrio, Golf, GTI & Jetta)	71 (8)
Selector Lever Cable Mounting Bolt (01M - New Beetle)	44 (5)
Selector Lever Cable-To-Support Bracket Bolt (01V)	106 (12)
Transaxle Range Switch Bolt	
01M (Except Cabrio)	89 (10)
01V	71 (8)
Transaxle RPM Sensor	
E17 Valve Body	53 (6)
E18 Valve Body	80 (9)
Transaxle Vehicle Speed Sensor Bolt	
01M (Except Cabrio)	89 (10)
01V	53 (6)
Valve Body Bolt	
01M	44 (5)
01V	71 (8)
Vehicle Speed Sensor Bolt (01M Except Cabrio)	89 (10)

(1) Inspecting fluid level and draining fluid are done at the same plug on 01M transaxles.

(2) Final drive fluid level is checked through speedometer drive.